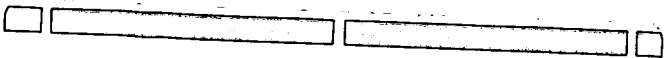


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**CONSOLIDATED CONSENT AGREEMENT/
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MONTHLY PROGRESS REPORT PERIOD ENDING
NOVEMBER 30, 1991**

11/30/91

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ENCLOSURE**

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Introduction

The Consent Agreement (CA) As Amended under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Sections 120 and 106(a) and the Federal Facility Compliance Agreement (FFCA) between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA), signed September 20, 1991 and July 18, 1986, respectively, require that monthly reports be submitted to the U.S. EPA regarding progress made to meet the provisions of those agreements. This report fulfills those requirements by describing actions undertaken at the Fernald Environmental Management Project (FEMP) during the period November 1 through November 30, 1991 and planned actions for the period December 1 through December 31, 1991.

Highlights of work completed in November by the DOE includes the following:

- The alternate well design for RA No. 3, South Groundwater Contamination Plume, Part 1 was completed on November 1, 1991.
- The Dual Trailer Design package for RA No. 3, South Groundwater Contamination Plume, Part 3 was issued for bid on November 5, 1991.
- The Operable Unit 4 Treatability Study Work Plan was submitted to the U.S. EPA on November 13, 1991.
- The Revised Work Plan for RA No. 8, Inactive Fly Ash Pile Control, was approved by the U.S. EPA on November 19, 1991.
- The revised EWMF Sampling and Analysis Plan (SAP) was submitted to the U.S. EPA on November 19, 1991.
- The Operable Unit 1 revised Treatability Study Work Plan, was approved without comment by the U.S. EPA on November 25, 1991.
- The Operable Unit 2 Treatability Study Work Plan was approved by the U.S. EPA on November 25, 1991.
- Removal Action No. 4 Silos 1 and 2, bentonite slurry installation in Silos 1 and 2 was completed on November 28, 1991 ahead of the scheduled commitment date of December 1, 1991.

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CA Section IX. Removal Actions (cont'd.)

Phase II Removal Actions

- o RA No. 8, Inactive Fly Ash Pile Control.
- o RA No. 9, Removal of Waste Inventories.
- o RA No. 10, Active Fly Ash Pile Controls.
- o RA No. 11, Pit 5 Experimental Treatment Facility.
- o RA No. 12, Safe Shutdown.
- o RA No. 13, Plant 1 Ore Silos.
- o RA No. 14, Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator.
- o RA No. 15, Scrap Metal Piles.
- o RA No. 16, Collect Uncontrolled Production Area Runoff--Northeast.
- o RA No. 17, Improved Storage of Soil and Debris.
- o RA No. 18, Control Exposed Material in Pit 5.

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RA No. 2, Waste Pit Area Runoff Control

The Work Plan for the Waste Pit Area Runoff Control Removal Action was approved with modifications by the U.S. EPA on January 10, 1991 and conditional approval was received from the Ohio EPA on April 2, 1991.

Field studies showed permeability factors as high as 1×10^{-3} cm/sec in the north and east detention areas. As a result of these field studies, modifications in the form of a soil liner have been made to the design for these detention areas.

Construction activities have been ongoing since June 6, 1991. Three of the eight construction sequences for the Waste Pit Area Runoff Control Removal Action have been completed.

The pre-excavation soil sampling and the subsequent reevaluation of the goals and objectives of the Sampling and Analysis Plan with respect to Hazardous Substance List (HSL) materials has resulted in a revision of the criteria for identifying the need for more samples, the disposition of excess construction soil, and the technical requirements for stockpiling the excavated soil (such as synthetic liners below and on top of the soil piles). The reevaluation of the results and the plan are to ensure that the criteria developed in the plan are adequate and appropriate for addressing each objective stated. Difficulties with site-wide issues related to the disposition of soils and debris necessitated the revision of the Sampling and Analysis Plan in terms of intermediate soil stockpiles along with a management plan for characterizing the excess material within 90 days of excavation. The revised plan was submitted to the U.S. EPA and the Ohio EPA for review and comment in October 1991. The revised Sampling and Analysis Plan includes the final determination for the disposition of excavated soil and the basis for the decision.

Activities in November 1991 included the continuation of excavation activities, initiation of construction of the sump, and sampling to meet build over criteria at the bottom of the sump.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Initiation of Bid/Award construction activities with issuance of the construction work order.	Completed. June 6, 1991.	June 1991
Completion of construction/ system testing (system operational).	Open, on schedule.	July 1992

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RA No. 3, South Groundwater Contamination Plume (cont'd.)

Part 2

The initial computer modeling required to relocate the Part 2 well field was completed in July 1991. A meeting was held with the U.S. EPA and the Ohio EPA on July 23, 1991 to discuss the results of the modeling. Draft findings were presented. High levels of uranium were predicted by the model to be discharged from the relocated well field. This prediction raised concerns that the equivalent mass resolution will be difficult to meet with the currently scheduled associated projects discussed at the meeting. All parties agreed that the well field be installed north of the industrial user, but the issue of equivalent mass will need to be addressed in Part 3.

In late August 1991, it was determined that the contractor for the Part 3 IAWWT trailer portion of the project (see below) could not perform. Therefore, the project would have to be rebid and the target date of December 15, 1991 could not be met.

Based on the reevaluation of all the above information, it was necessary to adjust the course of action for both projects. Accordingly, a restructuring concept for future direction was prepared which aggregately addressed the major outstanding issues for both the Part 2 and the Part 3 projects.

A formal proposal was prepared and presented to the U.S. EPA and the Ohio EPA at the August 29, 1991 Project Managers' meeting in Chicago. The proposal received verbal approval from the U.S. EPA and the Ohio EPA.

Accordingly, an addendum to the Engineering Evaluation/Cost Analysis (EE/CA) was prepared which defined the restructuring concept and was issued to the U.S. EPA and the Ohio EPA for review and comment. Comments were received from the Ohio EPA on September 25, 1991. Comments from the U.S. EPA were received on October 18, 1991.

Revisions to the addendum were made to reflect the comments received. The addendum was issued to the U.S. EPA and the Ohio EPA for a second review. Approval was received from the U.S. EPA and the Ohio EPA. The addendum will be placed in the Administrative Record for public review and comment.

The operating and maintenance plan for the Part 2 well field was prepared and issued for review to the U.S. EPA and Ohio EPA on November 1, 1991.

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RA No. 3, South Groundwater Contamination Plume (cont'd.)

Part 5 (cont'd.)

Summary

Draft responses to the Ohio EPA comments were prepared but are being held up pending reevaluation of the need to perform a pump test on the extraction well field.

A meeting was held with the U.S. EPA and the Ohio EPA on August 29, 1991 in Chicago where the current status of the South Groundwater Contamination Plume Removal Action was discussed. The DOE presented justification for delaying Parts 1, 2, and 3. A subsequent meeting was held on October 29, 1991 during which the projected revised completion dates for Parts 1, 2, and 3 were presented. A formal letter requesting extension of the completion dates was prepared and submitted to the U.S. EPA and the Ohio EPA on November 20, 1991. A meeting was held between the DOE/FO, the U.S. EPA, and the Ohio EPA to discuss schedule extensions for Parts 1, 2, and 3 of the South Plume Removal Action (SPRA) on November 21, 1991. Discussions in the meeting generated new dates for completion of the SPRA. The DOE continued submitting weekly reports on the South Plume Removal Action to provide all parties with up-to-date information.

Activities in December 1991 will focus on completing the drawings and specifications for the Part 1 water supply; issuing the Explanation of Significant Differences (ESD) to the U.S. EPA and the Ohio EPA for their approval; issuing the ESD for public comment and to DOE/HQ so that efforts to obtain National Environmental Policy Act's (NEPA) approval for Parts 2/3 can be initiated; completing and submitting responses to the Ohio EPA's conditional comments on the Part 1 and 5 Work Plans; obtaining access to the Part 5 study area; and reviewing CFC packages for the Part 1, Alternate Water Supply for AWA and Delta Steel. In addition, approval of the three CCB packages for Part 5 is expected.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Complete Part 1 (Alternate Water Supply).	Awaiting EPA formal approval of schedule revisions.	TBD
Complete Parts 2 and 3 (Extraction wells, force main, effluent pipeline and treatment system).	Awaiting EPA formal approval of schedule revisions.	TBD

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RA No. 5, K-65 Decant Sump Tank

Removal of the liquid from the K-65 decant sump tank was completed on April 16, 1991 when the liquid was transferred to the holding tanks in Plant 2/3.

The analytical results for the general water quality parameters, HSL volatile organics, HSL semi-volatile organics, and HSL pesticide organics and inorganics were received for the three samples of the decant liquid taken during the implementation of the Removal Action. Once the analytical results of the full radiological analyses for the three samples of the decant liquid are received, the treatment option will be determined.

The sludge samples were shipped to the contract laboratory on August 20, 1991 for full radiological analyses only.

The liquid pumped from the K-65 decant sump tank is being stored in the Plant 2/3 holding tanks until the analytical results are available and determination of the treatment required for the decant sump liquid is made.

Work in December will center on preliminary determination of the required treatment based on the available analytical results.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Complete the removal of the liquid from the K-65 decant sump tank.	Completed. April 16, 1991	April 26, 1991

RA No. 6, Waste Pit 6 Residues

This removal action was completed on December 19, 1990. The only remaining issue related to the Waste Pit 6 Exposed Material Removal Action involves the placement of air monitors to augment the site requirements for estimating the off-site releases of potentially harmful contaminants. The monitors have been procured. Installation is expected in early 1992. The final Waste Pit 6 Exposed Material Removal Action Report is expected in December 1991.

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RA No. 9, Removal of Waste Inventories

Removal of waste inventories is ongoing. During November 1991, 6,628 drum equivalents (DEs) of low level waste were disposed of at the Nevada Test Site (NTS).

The Ohio EPA comments on shipping procedures and practices were received and are being resolved.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Provide a compilation of existing site documentation supporting the ongoing low level waste and thorium management programs for submittal to the U.S. EPA and the Ohio EPA by August 21, 1991.	Completed.	August 21, 1991
Establish an administrative record file for Removal Action 9.	Completed.	August 21, 1991
Complete an addendum to the Community Relations Plan to accommodate this removal action consistent with the requirements of the National Contingency Plan (NCP).	In progress.	TBD
Modify existing internal procedures to ensure that appropriate shipping documentation is entered into the administrative record file.	In progress.	TBD
Provide a schedule for providing an update to the deliverable submitted pursuant to the compilation of existing site documentation supporting the ongoing low level waste and thorium management programs by January 15, 1992.	In progress.	January 15, 1992

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RA No. 12, Safe Shutdown

The Safe Shutdown Removal Action documents the ongoing shutdown activity that will remove uranium and other process/raw materials from equipment and lines in areas of formerly used processing equipment and will disposition the removed materials off-site.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Submit current work procedures to the U.S. EPA and the Ohio EPA.	Completed. October 31, 1991.	October 31, 1991.

Identifying manpower requirements to accelerate and complete disposition of capital equipment was finished as planned in November 1991. Efforts to establish the criteria and methods for handling noncapital expense items continued.

Progress has been made in identifying equipment for excess. As of November 30, 1991, 180 of 1500 items had been completed. A property disposition form attachment was developed to enable collection of several pieces of equipment on the same AC-563 Excess Equipment Form. This significantly reduces the paperwork required. Ongoing liaison work and engineering support continues with potential Department of Defense suppliers to encourage their interest in future use of excess equipment.

A response is expected from Headquarters on the Action Description Memorandum submitted October 7, 1991. National Environmental Policy Act (NEPA) information is being collected for the preparation of an Environmental Assessment for this Removal Action.

Work in December will focus on identifying manpower to perform initial radiological contamination surveys on capital equipment.

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RA No. 15, Scrap Metal Piles

The Scrap Metal Piles Removal Action will detail the stabilization and disposition of low-level radioactive waste scrap metal currently stockpiled on-site. This removal action will eliminate the potential threat of additional material releases to the environment due to wind, rain, or vehicular traffic. Approximately 1300 tons of scrap copper along with approximately 3,000 tons of recoverable scrap metals are the focus of this Removal Action.

December activities will include the preparation of the Work Plan.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Submit Work Plan to the U.S. EPA.	Open, on schedule.	January 31, 1992

RA No. 16, Collect Uncontrolled Production Area Runoff -- Northeast

The scope of this removal action is to collect the stormwater from the 136-acre production area that currently discharges from the perimeter of the production area and divert it to the existing stormwater sewer system.

The Removal Site Evaluation (RSE) was completed. The Removal Action Work Plan is being reviewed internally.

Activities in December 1991 will focus on completing the Removal Action Work Plan and obtaining NEPA approval from DOE/HQ so that Title II design can be initiated.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Submit work plan to the U.S. EPA.	Open, on schedule.	March 2, 1992

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CA Section X. Remedial Investigation and Feasibility Study (RI/FS)

This section provides an update on RI/FS Operable Units (OUs), RI/FS Community Relations, and Site Characterization for November 1991. Status information is presented for each of the five Operable Units identified in the Consent Agreement As Amended. The five Operable Units are described below:

- o Operable Unit 1 (OU 1): Waste Pit Area. Waste pits 1-6, clearwell, burnpit, berms, liners and soil within the operable unit boundary.
- o Operable Unit 2 (OU 2): Other Waste Units. Flyash piles, other south field disposal areas, lime sludge ponds, solid waste landfill, berms, liners, and soil within the operable unit boundary.
- o Operable Unit 3 (OU 3): Production Area. Production area and production-associated facilities and equipment (includes all above and below-grade improvements) including, but not limited to, all structures, equipment, utilities, drums, tanks, solid waste, waste, product, thorium, effluent lines, K-65 transfer line, wastewater treatment facilities, fire training facilities, scrap metal piles, feedstocks, and coal pile.
- o Operable Unit 4 (OU 4): Silos 1-4. Silos 1, 2, 3, and 4, berms, decant tank system, and soil within the operable unit boundary.
- o Operable Unit 5 (OU 5): Environmental Media. Groundwater, surface water, soil not included in the definitions of OU # 1-4, sediments, flora, and fauna.
- o Comprehensive Site-Wide Operable Unit: An evaluation of remedies selected for OUs 1-5 above (including remedial and removal actions) to ensure that they are protective of human health and the environment on a site-wide basis, as required by CERCLA, the NCP and applicable U.S. EPA policy and guidance.

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Operable Unit 1: Waste Pit Area

1.1 Field Investigation (cont'd.)

13-Well Program (cont'd.)

c. Corrective Actions

None required.

d. Planned Activities for December 1991

Continue waste pit leachate sample analyses.

1.2 Remedial Investigation

a. Status of Work - Key Milestones

The Radon Sampling Program was initiated in an effort to develop a representative measurement of radon releases from the waste pit area. The data will be used to support National Emission Standards for Hazardous Air Pollutants (NESHAP) compliance and RI/FS characterization requirements. The program consists of a one-time measurement of radon release using Large Area Activated Charcoal Collectors (LAACC). Approximately 100 LAACCs were placed on Waste Pits 1, 2, and 3. The LAACCs were left on the pits for 24 hours and then removed and analyzed. Continuous ambient air radon monitoring was also conducted during the period.

A work plan for conducting radon flux measurements in the waste pit area was submitted to the U.S. EPA on October 18, 1991. Verbal approval of the work plan was received from the U.S. EPA on October 29, 1991. Radon samples were collected for Waste Pits 1, 2, and 3 during November.

The objective of the Pits 5, 6, and Clearwell Sampling Program is to obtain sufficient quantities of samples for treatability studies and to provide additional RCRA characterization information on the waste pits. The pits will be sampled using one of the following methods as appropriate:

- a) slurry pump and backhoe
- b) clamshell and crane
- c) baler
- d) vibra-core sampler

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Operable Unit 1: Waste Pit Area

1.2 Remedial Investigation (cont'd.)

a. Status of Work - Key Milestones (cont'd.)

The Operable Unit 1 treatability studies will evaluate the two treatment process options identified in the Operable Unit 1 Initial Screening of Alternatives (ISA) document. The two treatment process options are cement stabilization and vitrification. The technical feasibility of these technologies will be evaluated by conducting a series of experiments on both composite waste samples and individual strata samples. Ranges of formulations will be investigated as will other performance criteria such as compressive strength, leachability, bulking factor and permeability. For cement stabilization, binding agents that will be evaluated include portland cement, fly ash, and sodium silicate. Clay (attapulgite and clinoptilolite) will be added to reduce the leachability of metals in the waste. Glass formers and modifiers being considered for vitrification are fly ash, soil, and sodium hydroxide.

A draft Treatability Study Work Plan was submitted for U.S. EPA review on July 26, 1991. Comments were received from the Ohio EPA on August 26, 1991 and from the U.S. EPA on September 10, 1991. The document was revised to reflect these comments and resubmitted to the U.S. EPA on October 8, 1991. The U.S. EPA approved the work plan without further comment on November 25, 1991.

The first phase of treatability testing was initiated on November 14, 1991. The work involved setting the first molds for cement stabilization.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

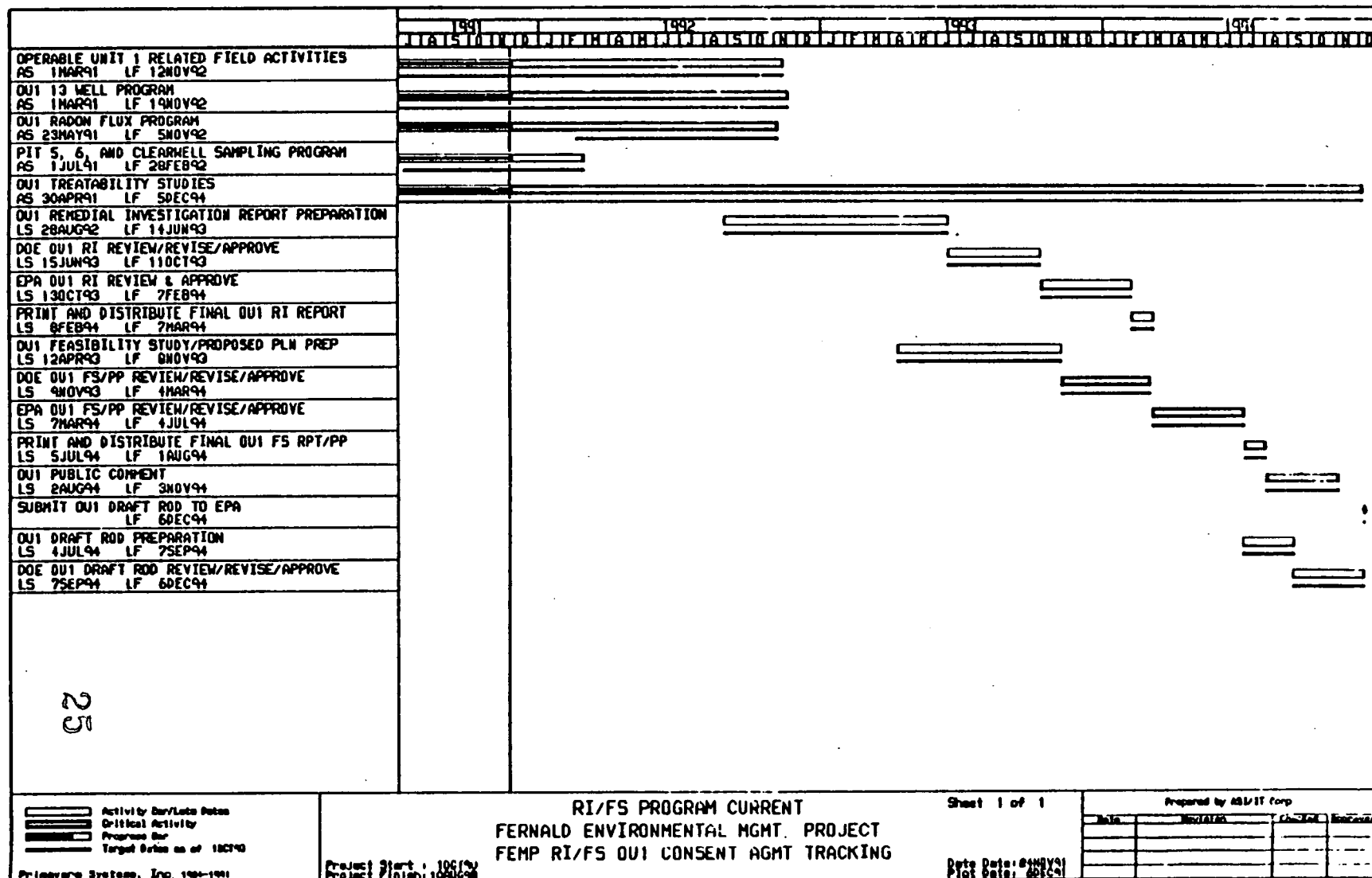
d. Planned Activities for December 1991

Continue the first phase of treatability testing. Initiate sampling of Pits 5, 6, and the Clearwell. Initiate field data analysis task of RI.

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Operable Unit 2: Other Waste Units

2.2 Remedial Investigation

a. Status of Work - Key Milestones

The purpose of the treatability studies is to provide additional information to support the Feasibility Study and subsequent remedy selection for Operable Unit 2. Specifically, the study will demonstrate whether stabilization can achieve a desired level of material strength, as well as obtain quantitative data for geochemical modeling and subsequent computer modeling of groundwater contaminant transport. The study is composed of two parts: preliminary stages (to support remedy screening) and advanced stages (to support remedy selection). The preliminary stage involved evaluating a range of stabilization mix formulations in order to determine a representative formulation which meets the proposed strength criteria. The advanced stage study involves performing toxicity characteristic leaching procedure (TCLP) leach tests on stabilized waste using representative formulations determined in the preliminary stage.

The Treatability Study Work Plan was resubmitted to the U.S. EPA on October 23, 1991. The Treatability Study Work Plan was approved by the U.S. EPA on November 25, 1991. Comments on the plan were received from the Ohio EPA.

Nine new Preliminary Stage II formulations for waste from the Lime Sludge Pond were prepared on November 7, 1991.

All modified TCLP results for the Solid Waste Landfill and Lime Sludge Pond were received. Partial results for the Southfield were received. All results were below the regulatory limits.

A request was made to the U.S. EPA regarding changing the requirement for proceeding from the Preliminary Stage I to the Advanced Phase from six to four formulations for the Southfield waste.

Preparation of the RI Report was initiated on November 18, 1991.

<u>Activity</u>	<u>Comment</u>
Initiate stabilization treatability studies by September 2, 1991.	Completed on September 9, 1991.

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Operable Unit 2: Other Waste Units

2.3 Feasibility Study

a. Status of Work - Key Milestones

Feasibility Study activities have not been resumed.

<u>Activity</u>	<u>Comment</u>
Issue draft Feasibility Study Report/Comprehensive Response Action Evaluation to the U.S. EPA by March 15, 1993.	Open, on schedule.
Issue the Proposed Plan to the U.S. EPA by March 15, 1993.	Open, on schedule.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for December 1991

During December, the review of Applicable or Relevant and Appropriate Requirements (ARARs) for regulatory changes promulgated in the past year is planned. This activity will be ongoing until the FS Report preparation activities are resumed.

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Operable Unit 3: Production Area

3.1 Field Investigation

a. Status of Work - Key Milestones

No activities were scheduled for Operable Unit 3 site characterization during November 1991.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for December 1991

None scheduled.

3.2 Remedial Investigation

a. Status of Work - Key Milestones

Operable Unit 3 initial scoping activities included continuation of activities begun in previous months: employee process knowledge interviews completed in October 1991; review of existing data; creation of data summary tables; and creation of facility/building maps. In addition, initial identification of appropriate remedial action objectives (RAOs), general response actions (GRAs), and major ARARs/TBCs were begun.

Phase I of the process knowledge interviews (the first 25 interviews) was completed in September 1991; Phase II was completed on October 21, 1991, bringing the total number of interviews to 46. Information gained from these interviews is being summarized as a separate document. In addition, this information was added, as appropriate, to other data summary tables. This information is being used primarily to supplement description and uses of structures and in identifying contaminants throughout the production area.

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Operable Unit 3: Production Area

3.2 Remedial Investigation (cont'd.)

a. Status of Work - Key Milestones

- Inventory of Product

Includes location, description and quantities; intended to provide both totals by location and a total for Operable Unit 3.

- Inventory of Contaminated Materials

Intended to provide total quantities of contaminated material; identifies location, type of material (e.g., soil, rubble, equipment, building materials), type/level of contamination, and volume/quantity of material.

- Inventory of Contaminants

Intended to provide comprehensive summary, including contaminant type, location and total quantity.

These preliminary tables will be utilized to support the development of the Work Plan addendum.

With the exception of the security building in the Administration area, the facility/building maps for Operable Unit 3 were completed in November 1991. The security building map will be completed in December 1991.

The initial version of the above described summary tables was completed in November; but this activity will continue through Work Plan development and submittal next June. Data identified while drafting the revised work plan will be included as they become available.

The identification of appropriate RAOs, GRAs, and ARARs for Operable Unit 3 was initiated earlier than originally scheduled as a result of the information and background already available for the FEMP from previous RI/FS activities. Although none of the RAOs, GRAs or ARARs are finalized, early initiation of this aspect of scoping helps maintain continuity with both other operable units and site-wide considerations at the FEMP. Final disposition for these activities will occur on or before the RI/FS schedule dates.

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Operable Unit 3: Production Area

3.3 Feasibility Study

c. Corrective Actions

None required.

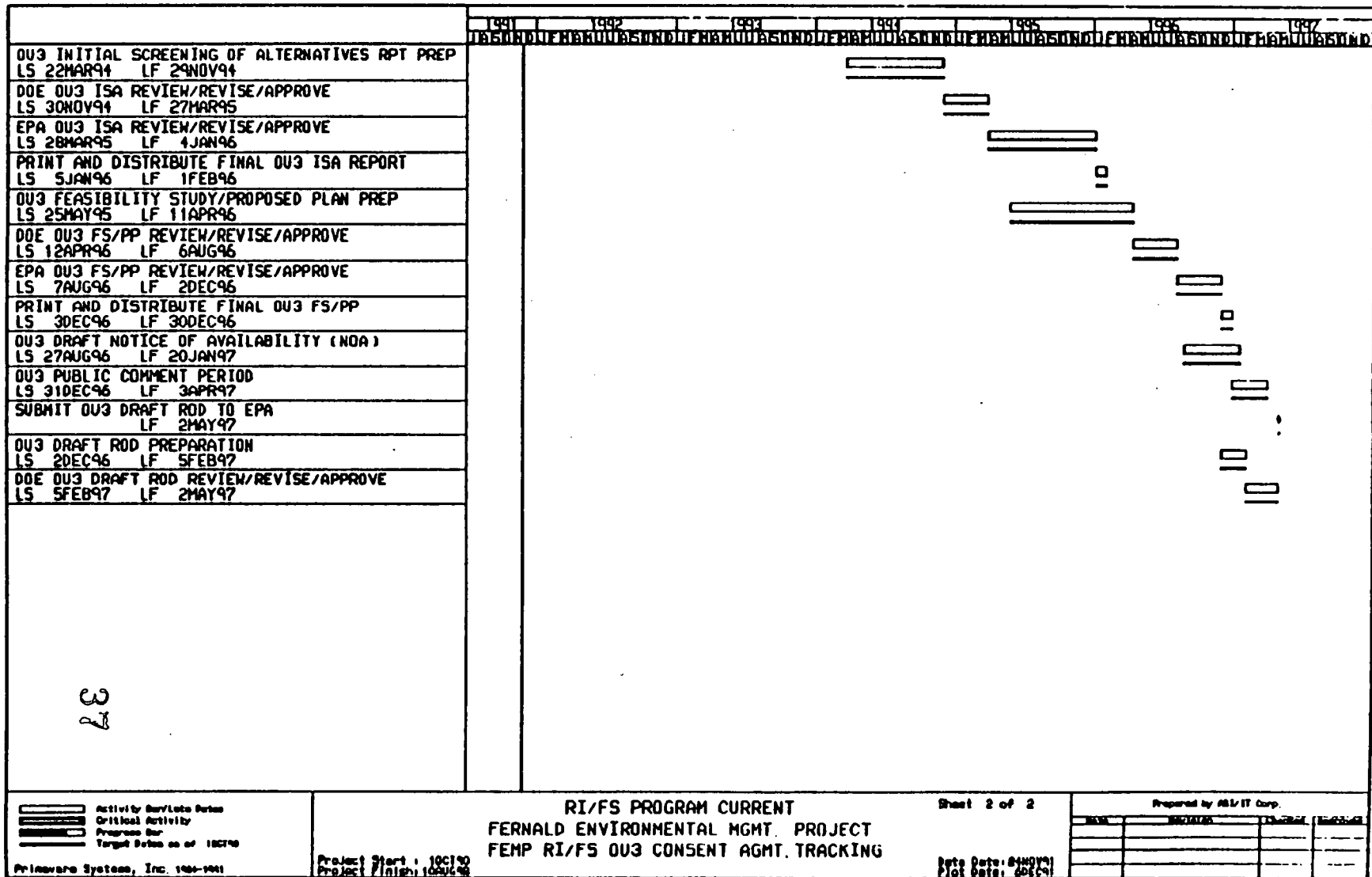
d. Planned Activities for December 1991

None scheduled.

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Operable Unit 4: Silos 1-4

4.2 Remedial Investigation

a. Status of Work - Key Milestones

A draft letter from the U.S. EPA stating disapproval of the Treatability Study work plan for stabilization/chemical extraction pending incorporation of comments was received by the DOE on November 7, 1991. An official letter from the Ohio EPA giving conditional approval with comments was received by the DOE on November 4, 1991. A resolution conference call was held with U.S. EPA and DOE project representatives on November 26, 1991. It was believed a consensus was reached on all issues except the procedure to measure radon in the leachate. A conference call will be held in December when other U.S. EPA representatives can attend to discuss the comments on the radon procedure. It is anticipated that when a consensus is reached on all issues, a formal letter giving conditional approval of the work plan will be issued by the U.S. EPA.

The Treatability Study is progressing to comply with Consent Agreement As Amended milestones even though the U.S. EPA has not approved the work plan. In an effort to remain on schedule with respect to the milestones, it was decided to proceed at risk prior to final U.S. EPA approval of the Work Plan. The decision to proceed at risk was based on comment resolution conference calls held with U.S. EPA, Ohio EPA, and DOE project representatives on September 11, October 1, and November 26, 1991.

Stabilization testing continued in November 1991. Preliminary Phase - Stage 1 specimens were curing during November and will be analyzed in early December 1991.

The Treatability Study Work Plan for the vitrification of residues from Silos 1, 2, and 3 was submitted to the U.S. EPA on November 13, 1991. Information gathered during this study will be used to support of the FS and subsequent remedy selection. The study considers vitrification of Silos 1, 2, and 3 material, determines quantity and composition of the off-gas generated during vitrification, radon emanation rate from the vitrified waste, and the leachability of the vitrified waste.

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Operable Unit 4: Silos 1-4

4.3 Feasibility Study

a. Status of Work - Key Milestones

No activities were completed on this task during November 1991 pending the receipt of site characterization analytical results.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for December 1991

No activities can be initiated pending receipt of characterization analytical results.

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Operable Unit 5: Environmental Media

5.1 Field Investigation

Paddy's Run South

a. Status of Work - Key Milestones

The objective of the Paddy's Run South investigation is to further quantify a value for leakage between the creek in Paddy's Run and the Great Miami Aquifer. Quantification of this parameter is important because inflow from the creek can affect the hydraulic gradient of the aquifer. The gradient of the aquifer is a major parameter used to calculate flow direction and velocity.

The Paddy's Run South investigation consists of the installation of twelve 2000-series wells along Paddy's Run, south of the FEMP, with the contingency to install twelve 3000-series wells, sample wells monthly for one year, stream gage measurements, stream infiltration measurements, and surface water sampling.

Groundwater sampling of all existing and installed monitoring wells within the Paddy's Run South investigation is on schedule. However, surface water samples have only been collected at one location due to insufficient quantities of stream flow.

Two of the five wells installed last month were developed and the initial round of groundwater was collected. The five completed wells were added to the list of existing wells within the Paddy's Run South program for monthly groundwater sampling.

b. Issues/Problems

Access delays have impacted the original scope of the project causing sampling activities to be spread over a one-year period.

c. Corrective Actions

The impact of these access delays on the overall characterization program is being evaluated.

d. Planned Activities for December 1991

Continue monthly groundwater sampling in the Paddy's Run South program.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending November 30, 1991

Operable Unit 5: Environmental Media

5.1 Field Investigation (cont'd.)

31-Well Program

a. Status of Work - Key Milestones

The purpose of the 31-Well Program is to help define the limits of uranium plumes, predominantly in the southern area of the FEMP.

Landowner access agreement and a Notice to Proceed was received for the installation of Well 2395, the final well remaining under the 31-Well Program.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for December 1991

Complete the second and final round of groundwater sampling for Well 3397. Mobilize cable tool rig to install Well 2395; develop and complete the initial round of groundwater sampling.

8-RCRA Well Program

a. Status of Work - Key Milestones

The 8-RCRA wells were installed to meet RCRA and RI/FS requirements in and around the FEMP waste storage area.

Well 1646 was not developed or sampled in November due to a very poor recharge rate. It was determined through a documents record check that Wells 2643 and 2649 require a second round of groundwater sampling.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

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Period Ending November 30, 1991

Operable Unit 5: Environmental Media

5.2 Remedial Investigation (cont'd.)

a. Status of Work - Key Milestones

The purpose of the treatability studies is to provide information to support the Feasibility Study (FS) and subsequent remedy selection for Operable Unit 5. Specifically, the study will demonstrate the feasibility of soil washing as a remedial technology for cleaning soils in Operable Unit 5. The study incorporates a physical/chemical treatment process that initially involves the separation of a soil into different particle-size fractions. Reagent formulations in the washing solutions are used in the extraction of radionuclides, organic, and inorganic compounds from these different-size fractions. The contaminants may be separated from the wash stream into a concentrated residue for further treatment.

Internal review comments on the Operable Unit 5 Treatability Study Work Plan for Soil Washing were received in October 1991, and responses to these comments were prepared and submitted. Revision to the draft document was initiated in October based on the comment responses and the document is being finalized for submittal to the U.S. EPA in early December 1991 ahead of the Consent Agreement As Amended schedule date of April 16, 1992.

Activity

Comment

Submit draft Treatability Study Work Plan to the U.S. EPA and the Ohio EPA by April 17, 1992.

Open, on schedule.

b. Issues/Problems

None to report.

c. Corrective Actions

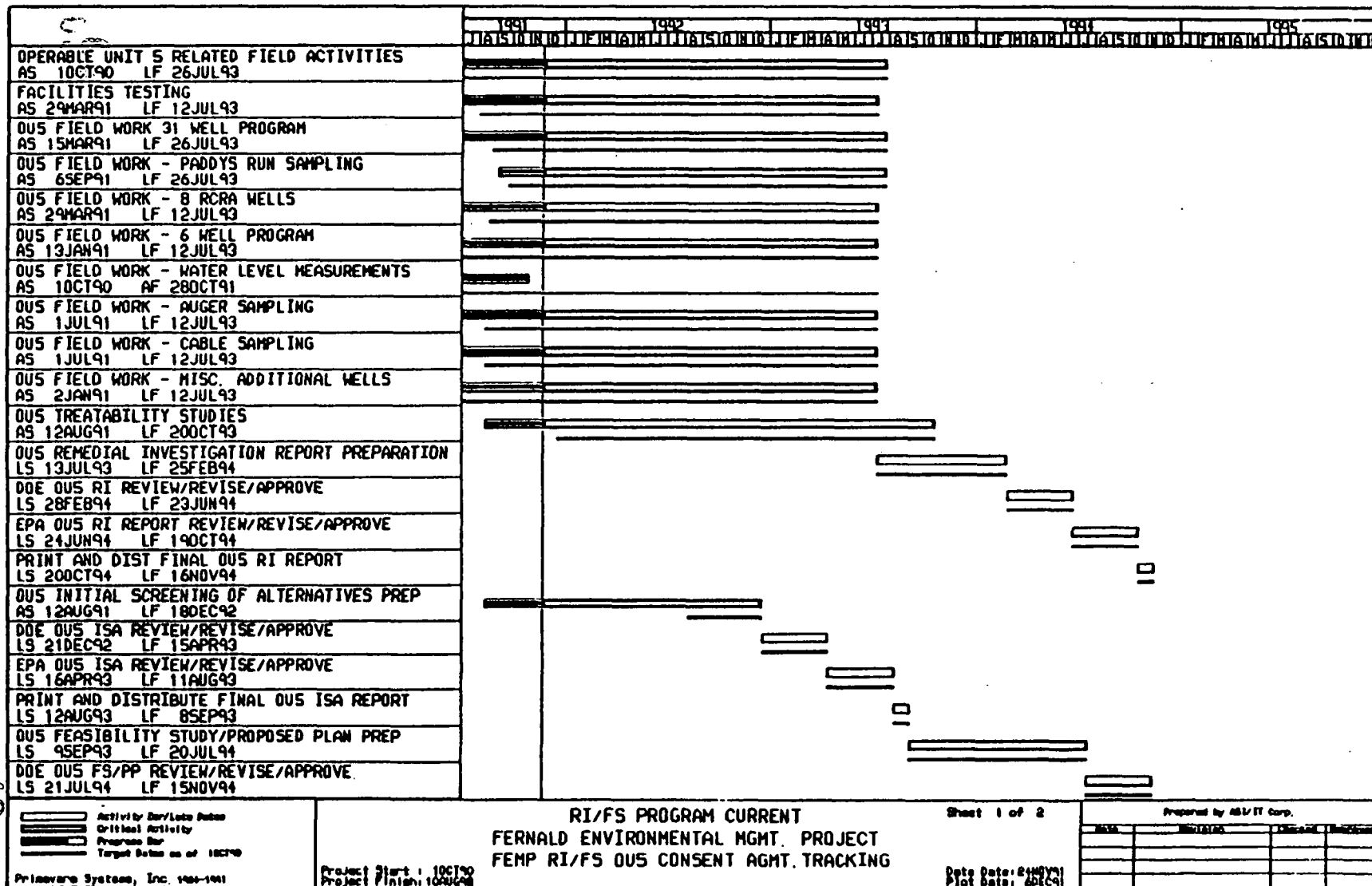
None required.

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CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY

COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

PERIOD ENDING NOVEMBER 30, 1991



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**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending November 30, 1991

6.0 RI/FS Community Relations

a. Status of Work

Two addenda for removal actions were added to the RI/FS and Removal Actions Community Relations Plan (CRP). They are: Addendum E - Plant 1 Pad Continuing Release Removal Action, and Addendum F -- Contaminated Water Beneath FMPC Buildings Removal Action. A Document Change Request (DCR) will be issued for both addenda before inclusion into the plan.

Another addendum to the CRP for Removal Action No. 9, Removal of Waste Inventories and Thorium Management Procedures, was completed and is being reviewed internally.

The CRP (August 1990) has been updated. The draft is being reviewed internally. Highlights of some of the revisions/updates are:

- new mission and name of the facility
- update on Environmental Impact Statement status
- Consent Agreement As Amended and schedules
- transfer of site responsibility within the DOE
- supplemental community relations
- updated population figures
- updated appendices
- status of removal actions
- updated figures and tables

Community relations staff made a presentation at the Site-Specific Field Training session on November 20, 1991. The training was for all new RI/FS employees.

A Roundtable meeting focusing on "Fernald Site Communication with Neighbors" was held on November 4, 1991 at the ERA Alpha Building. Eight citizens from the community and six attendees from the FEMP were in attendance.

b. Issues/Problems

None to report.

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Period Ending November 30, 1991

7.0 Engineered Waste Management Facility

a. Status of Work - Key Milestones

This program will evaluate the ability of the Engineered Waste Management Facility (EWMF) to manage the remedial waste generated by the Operable Units.

The EWMF Sampling and Analysis Plan (SAP) is an addendum to the RI/FS Work Plan (March 1988) and specifies a series of soil sample collection and analytical activities. Geotechnical, geochemical, radiological, and chemical soil samples will be collected for analysis from 18 geotechnical borings (each approximately 30 feet deep) and eight wells (five 1000-series and three 2000-series) to be installed under this program.

All surface soil samples will receive full radiological and full HSL analyses while, in general, samples collected at mid-stratum of the glacial overburden will receive total uranium and gamma spectral analyses only. The geochemical samples selected for batch adsorption tests, x-ray diffraction analysis, and polarized light microscopy will be used to calculate retardation coefficients for an EWMF groundwater fate and transport model. The balance of the collected soil samples will receive geotechnical testing for preliminary engineering purposes. In addition, an on-and off-property NEPA ecological characterization program will be conducted with biota sampling performed on trees at nine on-property locations.

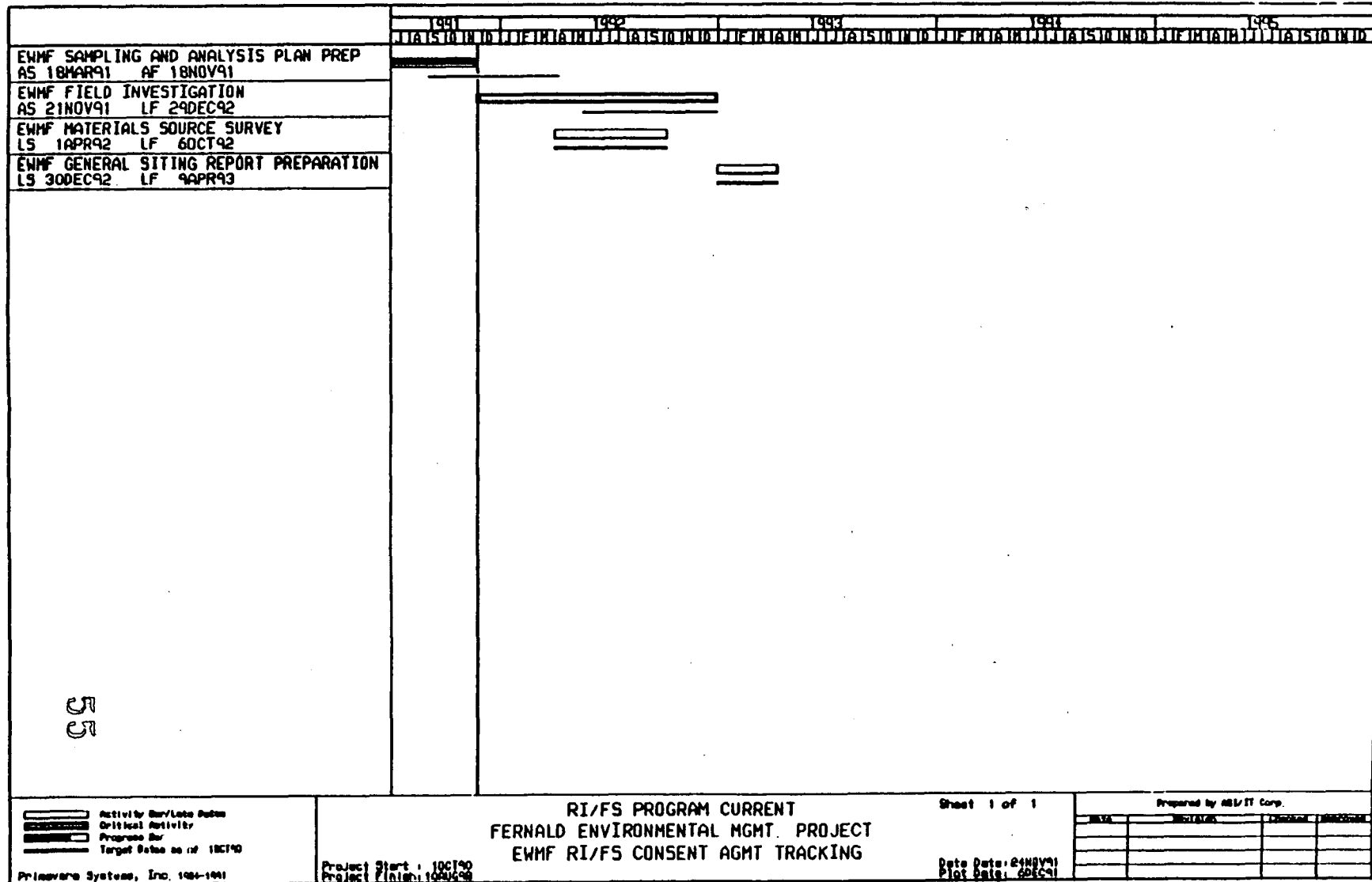
The resultant SAP field and laboratory data will be used to support the evaluation of criteria for a detailed analysis of the EWMF as an on-property waste disposal/storage alternative per the methodology given in "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (EPA 1988).

Comments were formally received from the Ohio EPA on October 18, 1991 and the U.S. EPA on October 23, 1991. The U.S. EPA approved the SAP pending incorporation of comments. Incorporation of comments was initiated immediately. The formal comment/response document and EWMF SAP were submitted to the U.S. EPA on November 19, 1991.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY

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**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending November 30, 1991

8.0 Site-Wide Characterization Report

Report Preparation

The Site-Wide Characterization Report (SWCR) is a one-time summary of all FEMP site data available as of December 1, 1991. It will contain the Preliminary Baseline Risk Assessment, which will estimate human health and ecological risk of the FEMP from a site-wide perspective. The SWCR will also provide the initial list of Leading Remedial Alternatives for each operable unit for input into the FS Cumulative Response Action Risk Evaluation.

A detailed outline is being prepared to guide preparation of the SWCR.

The RI/FS database staff has identified the method that will be used to flag all data present in the database as of close of business December 1, 1991, the cutoff date for data to be used in the SWCR. A list will be created on the database December 1 of all data present. This list will then be accessed as the database for the SWCR.

Data that will not change before the December 1 cutoff date were identified, in order to begin the groundwater modeling effort in support of the Preliminary Baseline Risk Assessment.

SWCR staff also prepared a priority system for data validation, to be used for the SWCR and other RI/FS reports. Development also began of a method for identifying the Leading Remedial Alternative for each Operable Unit.

This activity will begin upon receipt of U.S. EPA comments on the Risk Assessment Work Plan Addendum. Preliminary activities have begun in anticipation of receipt of these comments, including preparation of a schedule, identification of personnel, a review of data needs, and preparation of a draft list of figures and tables.

The Preliminary Baseline Risk Assessment was scheduled to begin following receipt of U.S. EPA comments on the Risk Assessment Work Plan Addendum. The comments were not received by the end of the month.

Activity

Comments

Submit Site-Wide Characterization Report to the U.S. EPA by August 5, 1992.

Open, on schedule.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending November 30, 1991

Introduction

The accompanying Effluent Radiation Reports provide, in accordance with the requirements of Section XXIII.B of the Consent Agreement As Amended under CERCLA Sections 120 and 106 (a), data on the daily wastewater flows, radionuclide concentrations, and loadings released to the Great Miami River and an estimate of runoff and radionuclide concentrations to Paddy's Run during November 1991.

Summary - November 1991

The total quantity of uranium discharged from the FEMP to the Great Miami River via Manhole 175 (Outfall 1I000004001) was 19.54 kilograms. The average uranium concentration for the previous 12 months was 0.80 mg/l. This is 89.9 percent of the Derived Concentration Guide (DOE Order 5400.5) for dischargeable offsite water.

There was no discharge from the Stormwater Retention Basin (Outfall 1I000004002) to Paddy's Run via the Storm Sewer Outfall Ditch in November 1991. Based on 1.50 inches of rainfall in November 1991, the total quantity of uranium discharged to Paddy's Run from uncontrolled areas of the FEMP is estimated to be 6.75 kilograms.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending November 30, 1991

Wastewater Flows and Radionuclide Concentrations (cont'd.)

FACILITY: Fernald Environmental Management Project

LOCATION: 001 Total Discharge

MONTH: November 1991

	<u>Flow (MGD)</u>	<u>Total Alpha (pCi/l)(2)</u>	<u>Total Beta (pCi/l)(2)</u>	<u>Total U (mg/l)(2)</u>	<u>Total U (kgs)</u>	<u>Calculated Total U-238 (pCi/l)(1)(2)</u>
Avg.	0.324	298	183	0.53	0.65	179
Max.	0.780	644	392	1.06	1.48	358
Min.	0.132	104	90	0.26	0.27	88

The average uranium concentration for the previous 12 months was 0.80 mg/l. This is 89.9 percent of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

Comments: (1) The calculated total U-238 is based on a conversion factor of 337.84 pCi U-238/mg Total U applied to the measured value of total uranium.

(2) Average values presented are flow-weighted.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

PERIOD ENDING NOVEMBER 30, 1991

ENCLOSURE B

**FFCA: INITIAL REMEDIAL MEASURES
AND OTHER OPEN ACTIONS**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending November 30, 1991

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND
LIABILITY ACT (CERCLA)**

3. Reports and Record Keeping

Section B

The RI/FS Monthly Technical Progress Report for October 1991 was transmitted to the U.S. EPA on November 20, 1991 as an integral part of the Consolidated Consent Agreement/Federal Facility Compliance Agreement (CA/FFCA) Monthly Progress Report in accordance with the requirements of Section X of the Consent Agreement As Amended.

CLEAN AIR ACT (CAA)

Section E

The twentieth Quarterly Particulate Emissions Report for the period July 1, 1991 through September 30, 1991 was submitted to the U.S. EPA on November 19, 1991.

RADIATION DISCHARGE INFORMATION

Section A

The twentieth Quarterly Liquid Discharge Report for the period July through September 1991 was submitted to the U.S. EPA on November 19, 1991.

TABLE 1

**STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON
FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS**

**STATUS OF ACTIONS AS OF
NOVEMBER 30, 1991**

ACTION	DESCRIPTION	COMPLETION TIME AFTER FFCA SIGNED	FY92 STATUS
CERCLA			
1.	INITIAL REMEDIAL MEASURES		
1.C	Implement radon control plan approved by the U.S. EPA.	-----	No longer applicable. Progress on actions to address radon emissions from the K-65 Silos are being reported separately under Section IX-Removal Actions of the Consent Agreement/FFCA Monthly Progress Report.
2.	REMEDIAL INVESTIGATION/FEASIBILITY STUDY		No action required.
2.A	RI/FS work is to be conducted in accordance with the U.S. EPA guidelines.	N/A	
2.B	-- No Action Required --	-----	Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
2.E	Amend and submit revised RI/FS Work Plan to U.S. EPA if deficiencies are found.		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
2.F	Implement tasks described in the approved RI/FS Work Plan.		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement As Amended under CERCLA Sections 120 and 106(a).
3.	REPORTS AND RECORD KEEPING		
3.B	Submit monthly RI/FS progress reports.	monthly	The RI/FS Monthly Progress Report for September 1991 was transmitted to the U.S. EPA on October 21, 1991 (DOE-160-92).
CLEAN AIR ACT			
B.4	Prepare annual progress report on installation and replacement of emission control devices.	yearly	The Third Annual Progress Report on the installation and replacement of emission control devices was transmitted to the U.S. EPA on February 8, 1991 (DOE-708-91).
C.	Provide annual reports to U.S. EPA per 40 CFR 61.94(c).	yearly	The Annual NESHAP Compliance Report for CY 1990 was transmitted to the U.S. EPA on June 25, 1991 (DOE-1537-91).
D.1	Provide U.S. EPA with yearly stack-testing schedule.	yearly	The 1989 stack testing schedule was transmitted to the U.S. EPA on June 16, 1989. A letter (DOE-1615-89) was transmitted to the U.S. EPA on September 15, 1989 indicating that, due to the uncertainty concerning resumption of production at the FEMP, the 1989 FFCA Stack Testing Program was being deferred. In August 1991, the DOE confirmed that no further production would take place at the facility, and renamed the facility the FEMP. Some stack operations are expected when waste processing operations are resumed. The U.S. EPA will be provided with notification of future stack testing dates when operating schedules are formulated.

TABLE 1

**STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON
FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS**

**STATUS OF ACTIONS AS OF
NOVEMBER 30, 1991**

ACTION	DESCRIPTION	COMPLETION TIME AFTER FFCA SIGNED	FY92 STATUS
RADIATION DISCHARGE INFORMATION			
A.3	Report to U.S. EPA, Ohio EPA and Ohio Department of Health the results of the continuous liquid discharge samples.	quarterly	The twentieth Quarterly Liquid Discharge Report for the period July through September 1991 was transmitted to the U.S. EPA on November 19, 1991 (DOE-370-92). The nineteenth Quarterly Liquid Discharge Report for the period April through June 1991 was transmitted to the U.S. EPA on August 30, 1991 (DOE-2120-91).
REPORTING REQUIREMENTS			
B.	Issue monthly progress report of actions taken to ensure compliance with FFCA requirements.	monthly	October's FFCA Monthly Progress Report was transmitted to the U.S. EPA on November 20, 1991 (DOE-380-92).

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

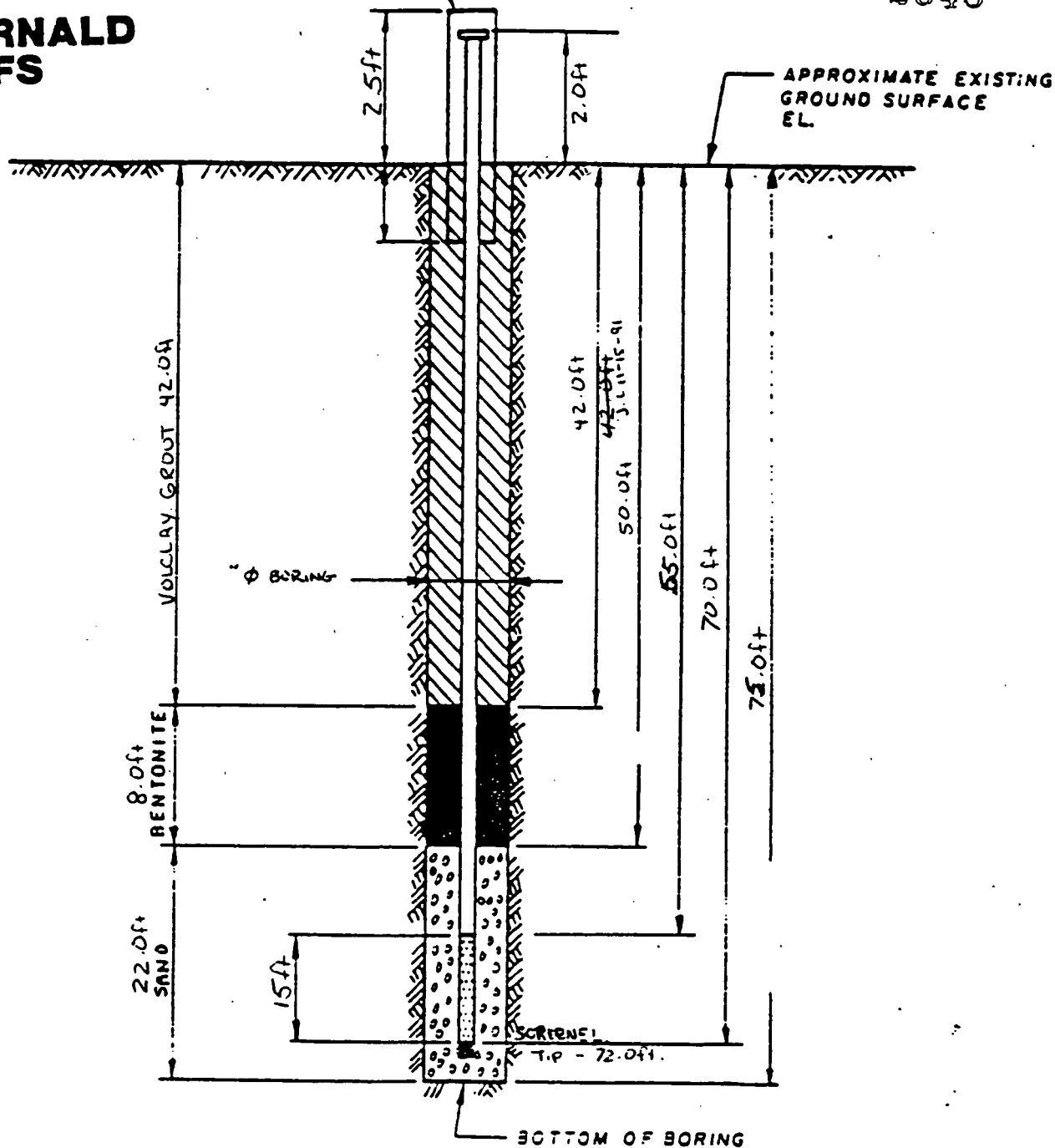
PERIOD ENDING NOVEMBER 30, 1991

**ENCLOSURE C
DRILLING AND BORING LOGS**

PROTECTIVE RISER CASING

2548

**FERNALD
RI/FS**



NOTES:

1. RISER PIPE IS 4.0 IN. I.D. SCHEDULE 40 SS. PIPE, THREADED, FLUSH-JOINTED.
2. SCREEN IS 4.0 IN. I.D. SS. PIPE CONTINUOUS SLOT SCREEN (0.010 IN. SLOT SIZE).
3. LOWER END OF SCREEN IS CAPPED.
4. ELEVATION OF WATER LEVEL
5. WATER LEVEL READING ON
 - S 5 gal buckets of bentonite pellets
 - B bags of 80 lb 10x20 sand
 - Z 50 lb bags void clay grout
 - 200 gals H₂O used

INSTALLATION DETAILS
MONITORING WELL

2398

PREPARED FOR

Fernald RI/FS

73

Amount of Stainless - 1- 2ft RISER 1-5ft section
5- 10ft sections 1-15ft screen
1- 2ft sump

FIELD ACTIVITY DAILY LOG

DATE	11/12/91
NO.	NA
SHEET	1 OF 1

PROJECT NAME FEMP RI/FS		PROJECT NO. 602.3.23	
FIELD ACTIVITY SUBJECT: 2398		2548	
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS		METER CALIBRATION	
<p>0700 - Arrive at ASI</p> <p>0730 - At trailers, get drillers</p> <p>0800 - At 2398</p> <p>0830 - Sampling and drilling continues</p> <p>- sample Nos 33512-33519</p> <p>1130 - Lunch</p> <p>1230 - At office talk to Hertel concerning 00-2 Soil Density readings</p> <p>1300 - Rain starts, H&S shuts down rig Rain off and on</p> <p>1600 - Exit for Day</p>		<p>Hnu Calibration Gas Isobutylene</p> <p>Hnu S/N 7111 (10.2eV) Span 1.85 Cal. to 55 ppm</p> <p>Hnu S/N (eV) Span Cal. to ppm</p> <p>for Meter S/N 5 passed Cal. check using first 9</p> <p>4 Meter S/N 14 passed Cal. check using plate</p>	
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.	
Ben Brier		NA	
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS:	
Cold, wet		NA 74	
PERSONNEL ON SITE: J. Lear B. Brier A. Cleaver C. Coulter G. Dye			
SUPERVISOR: J. Lear		DATE: 11-12-91	

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FEMP RI/FS FIELD ENG./GEO. J. Lear DATE 11-15-91
PROJECT NO. 1602.3.23 CHECKED BY _____ DATE _____
BORING NO. 239B
PIEZOMETER NO. 239B DATE OF INSTALLATION 11-14, 11-15-91

BOREHOLE DRILLING

DRILLING METHOD <u>Cable Tool</u>	TYPE OF BIT <u>Cable Tool Bit</u>
DRILLING FLUID(S) USED: <u>H₂O</u>	CASING SIZE(S) USED: <u>8 in</u>
FLUID <u>H₂O</u> FROM <u>0 ft</u> TO <u>75 ft</u>	SIZE <u>8 in</u> FROM <u>0</u> TC _____
FLUID <u>NA</u> FROM <u>NA</u> TO <u>NA</u>	SIZE <u>NA</u> FROM <u>NA</u> TC <u>NA</u>

PIEZOMETER DESCRIPTION

TYPE <u>4 in ID Stainless Steel</u>	RISER PIPE MATERIAL <u>4 in Stainless</u>
DIAMETER OF PERFORATED SECTION <u>4 in</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE:	O.D. <u>4 3/8</u> I.D. <u>4.0 in</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SLOTTED SCREEN <input checked="" type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>10 ft, 5 ft, 2 ft</u>
AVERAGE SIZE OF PERFORATIONS _____	JOINING METHOD <u>Threaded, flush joined</u>
TOTAL PERFORATED AREA _____	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5.0 ft</u>	OTHER PROTECTION <u>Well cap, vented,</u>
PROTECTIVE PIPE O.D. <u>10.75 in</u>	<u>hinged, locked riser</u>

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE ()		ELEVATION ()	
TOP OF RISER PIPE	2.8			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	2.5			
BOREHOLE FILL MATERIALS: GROUT / SLURRY BENTONITE SAND <u>J.L. 11-15-91</u> GRAVEL	TOP	0.0	BOTTOM	42.0
	TOP	42.0	BOTTOM	50.0
	TOP	50.0	BOTTOM	72.0
	TOP	NA	BOTTOM	NA
PERFORATED SECTION	TOP	55.0	BOTTOM	70.0
PIEZOMETER TIP	72.0			
BOTTOM OF BOREHOLE	75.0			
GWL AFTER INSTALLATION				

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION?

YES ☐

NO ☒

WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER?

YES ☐

NO ☒

75

REMARKS _____

FIELD ACTIVITY DAILY LOG

DATE	11/13/91
NO.	NAI
SHEET	125951

PROJECT NAME <u>J Lear FEMP RI/FS</u>		PROJECT NO. <u>602.3.23</u>	
FIELD ACTIVITY SUBJECT: <u>B# 2398</u>			
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS:		METER CALIBRATION	
<p>0700 - Arrive at ASI</p> <p>0730 - To trailers get supplies</p> <p>0800 - at B# 2398 Drilling & Sampling begins Samples 33520-33525 taken</p> <p>1145 - Lunch</p> <p>1245 - At 2398 Drilling resumes Samples 33526-33528 taken</p> <p>1530 - Drilling ends wait for water level to seek its own level before taking measurements and setting well.</p> <p>1600 - to trailers get phone call from Doc Cleeter. ASI van parked incorrectly go into plant and move it.</p> <p>1700 - At trailers</p> <p>1730 - At office get info from Tom Wesman concerning DU-2 coordinates needed at oak ridge</p> <p>1745 - exit site</p>		<p>Hnu Calibration Gas Iso butylene</p> <p>Hnu S/N 71111 (10.2 eV) Span 1.82 Cal. to 55 ppm</p> <p>Hnu S/N (eV) Span Cal. to ppm</p> <p>for Meter S/N 5 passed Cal. check using fresh</p> <p>for Meter S/N 14 passed Cal. check using Plate</p>	
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.	
None		NA	
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS:	
warm P. cloudy.		NA 76	
PERSONNEL ON SITE: <u>C. Coulter J. Lear A. Cleeter G. Dye</u>			
SUPERVISOR: <u>J. Lear</u>		DATE: <u>11-11-91</u>	

FIELD ACTIVITY DAILY LOG

DATE	11/14/91
NO.	NA
SHEET	1 OF 1

PROJECT NAME FEMP RI/FS		PROJECT NO. 602.3.23	
FIELD ACTIVITY SUBJECT: B# 2398			
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS:		METER CALIBRATION	
0700 - Arrive at ASI 0800 - to trailers get supplies 0805 - At site 0830 - casing pull begins for well setting 01000 - Drillers get sand and Bentonite 1130 - Lunch 1230 - At site 1300 - well setting continues 1730 - exit site		Hnu Calibration Gas Isobutylene Hnu S/N 7111 (40.2 eV) Span 1.82 Cal. to 55 ppm Hnu S/N (eV) Span Cal. to ppm pr Meter S/N 5 passed Cal. check using Plate a Meter S/N 14 passed Cal. check using Plate	
		Breathing Zone 0800 - 00 ppm 1000 - 00 ppm	
VISITORS ON SITE: Bruce Myers		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS. NA	
WEATHER CONDITIONS: warm, cloudy		IMPORTANT TELEPHONE CALLS: NA 77	
PERSONNEL ON SITE J. Lear A. Cleeter C. Coulter G. Dye			
SUPERVISOR: J. Lear		DATE: 11-14-91	

VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602.3.23	PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 2398	COORDINATES:	DATE 11-11-91
ELEVATION:	GWL: Depth 6045 Date/Time 11-14-91	DATE STARTED: 11-11-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 11-14-91
DRILLING METHODS: cable Tool		PAGE 1 OF 8

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.0 ft	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	33502 1500 11-11-91	10 13	5	med dense, yellowish brown, (10yr, 5/4) clayey silt, some organics, moist.	ML	NA	H ₂ O - 0 ppm B ₂ - 40 cpm α - 0 cpm
2	33503 1505 11-11-91	6 14	5	S.A.A., trace organics	ML	NA	H ₂ O - 0 ppm B ₂ - 40 cpm α - 0 cpm
3	33504 1510 11-11-91	8 12	16	med dense, light yellowish brown, (10yr, 6/3) silt, some clay, moist.	ML	NA	H ₂ O - 0 ppm B ₂ - 40 cpm α - 0 cpm
4	33505 1515 11-11-91	14 10	13	med dense, light yellowish brown, (10yr, 6/3) silt, some clay, moist.	ML	NA	H ₂ O - 0 ppm B ₂ - 40 cpm α - 0 cpm
5	33506 1520 11-11-91	30 20	12	med dense, light yellowish brown, (10yr, 6/3) silt, some clay, laminar sand and gravel, moist.	ML	NA	H ₂ O - 0 ppm B ₂ - 40 cpm α - 0 cpm
6	33507 1525 11-11-91	4 14	2	Dense, yellowish brown, (10yr, 5/6) clayey silt laminar sand & gravel, moist.	ML	NA	H ₂ O - 0 ppm B ₂ - 40 cpm α - 0 cpm
7	33508 1530 11-11-91	2 3	10	V. st. ff., yellowish brown, (10yr, 5/6) silty clay. Trace sand, trace gravel, low plast., moist.	CL	2.0	H ₂ O - 0 ppm B ₂ - 40 cpm α - 0 cpm
8	33509 1540 11-11-91	6 14	13	st. ff., gray, (10yr, 5/6) silty clay, trace gravel, moist. low plast. city.	CL	1.5	H ₂ O - 0 ppm B ₂ - 50 cpm α - 0 cpm
9	33510 1545 11-11-91	3 10	12	S.A.A.	CL	1.75	H ₂ O - 0 ppm B ₂ - 50 cpm α - 0 cpm
10	33511 1550 11-11-91	2 10	6	S.A.A.	CL	1.75	H ₂ O - 0 ppm B ₂ - 50 cpm α - 0 cpm
11	33512 1555 11-11-91	9 10	6	S.A.A.	CL	1.75	H ₂ O - 0 ppm B ₂ - 50 cpm α - 0 cpm

NOTES: Drilling Contractor - Penn Drilling
Drilling Equipment - Cyclone 45
Driller - Craig Coulter
Asst - Gary Dye

S.A.A.
Same as Above

N.R.
No Recovery

Backgrounds

H₂O - 0 ppm
B₂ - 50 cpm
α - 0 cpm

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VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602.3.23		PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 2398		COORDINATES:	DATE 11-11-91
ELEVATION:	GWL: Depth	Date/Time See pg 1	DATE STARTED: 11-11-91
ENGINEER/GEOLOGIST: J. Lear	Depth	Date/Time	DATE COMPLETED: 11-14-91
DRILLING METHODS: cable tool			PAGE 2 OF 8

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 in	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	03512 0830 11-12-91	5 6 8	0	N.R.	NA	NA	U _{nu} - e _s - NA. α -
17	33513 0815 11-12-91	9 8 10	2	stiff, gray, (10yr, silty) clay, trace gravel, low plasticity, moist. Large gravel stopped recovery	CL	2.0	U _{nu} - 0 ppm e _s - 50 cpm α - 0 cpm
18	33514 0855 11-12-91	16 10 19	0	N.R.	NA	NA	U _{nu} - e _s - N.A. α -
19	33515 0900 11-12-91	5 9 11	5	stiff, gray (10yr, silty) silty clay, some gravel, low plasticity, moist.	CL	2.0	U _{nu} - 0 ppm e _s - 50 cpm α - 0 cpm
20	33516 0925 11-12-91	5 8 10	7	stiff, gray, (10yr, silty) silty clay, trace gravel, med plasticity, moist	CL	1.75	U _{nu} - 0 ppm e _s - 50 cpm α - 0 cpm
21	33517 0950 11-12-91	6 9 14	10	S.A.A.	CL	1.75	U _{nu} - 0 ppm e _s - 50 cpm α - 0 cpm
22	33518 1000 11-12-91	9 15 27	9	24.5' S.A.A. Dense, yellowish brown, (10yr, silty) poorly sorted gravelly sand, trace silt, moist.	CL SW	1.75 NA	U _{nu} - 0 ppm e _s - 50 cpm α - 0 cpm
23	33519 1055 11-12-91			Aquifer met at 24.5' samples to be taken at 5ft intervals			
24	33520	91					
25							
26	33521	J.L.					

NOTES: see page 1

VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602.3.23		PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 2398		COORDINATES:	DATE 11-12-91
ELEVATION:	GWL: Depth	Date/Time Sep 91	DATE STARTED: 11-11-91
ENGINEER/GEOLOGIST: J. Lear	Depth	Date/Time	DATE COMPLETED: 11-14-91
DRILLING METHODS: Cable Tool			PAGE 3 OF 8

DEPTH (Ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PFC (6 in)	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
30	33579	15					
31	1055 11-12-91	27 30	9	Very dense, yellowish brown, (10yr, 5/4) well sorted med. sand, trace gravel, moist.	SP	NA	H ₂ O - 0 ppm GB - 50 cpm α - 0 cpm
32							
33							
34							
35	33520	50/5					
36	0850 11-13-91		6	S.A.A.	SP	NA	H ₂ O - 0 ppm GB - 50 cpm α - 0 cpm
37							
38							
39							
40	33521	9		med dense, yellowish brown, (10yr, 5/4) fine sand (well sorted), moist.	SP	NA	H ₂ O - 0 ppm GB - 50 cpm α - 0 cpm
41	0905 11-13-91	" 14	12	med dense, yellowish brown, (10yr 5/6) well sorted fine sand, dry	SP	NA	H ₂ O - 0 ppm GB - 50 cpm α - 0 cpm
42							
43							
44							
45							

NOTES:

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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.3.23	PROJECT NAME: FEMP RI/FS		
BORING NUMBER: 2398	COORDINATES:	DATE 11-13-91	
ELEVATION:	GWL: Depth	Date/Time See pg 1	DATE STARTED: 11-11-91
ENGINEER/GEOLOGIST: J. Lear	Depth	Date/Time	DATE COMPLETED: 11-14-91
DRILLING METHODS: Cable Tool			PAGE 4 OF 8

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 in	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
45	33522	50/4	5	very dense, yellowish brown (10yr, 5/6) gravelly sand, trace clay, moist	SW	NA	H ₂ O - 0 ppm B ₂ - 50 cpm α - 0 cpm
46	0955						
47	11-13-91						
48							
49							
50	33523	7		very dense, yellowish brown (10yr, 5/6) med well sorted med sand, trace large gravel, moist	SP	NA	H ₂ O - 0 ppm B ₂ - 50 cpm α - 0 cpm
51	1040	13	6				
	11-13-91	50					
52							
53							
54							
55	33524	50/5		very dense, pale brown (10yr, 6/3) well sorted fine sand, trace gravel, moist.			H ₂ O - 0 ppm B ₂ - 50 cpm α - 0 cpm
56	1120		2				
	11-13-91						
57							
58							
59							

NOTES see page 4

FIELD ACTIVITY DAILY LOG

DATE	11	15	91
NO.	101		
SHEET	1	OF	1

PROJECT NAME FEMP RI/FS

PROJECT NO. 602.3.23

FIELD ACTIVITY SUBJECT: B# 2398 Well completion

DESCRIPTION ON DAILY ACTIVITIES AND EVENTS:

METER CALIBRATION 2548

0715 - Arrive at ASI

Hnu Calibration Gas Isobutylene

0730 - To site

Hnu S/N 7108 (10.2eV) Span 235 Cal. to 55 ppm

0815 - Well completion

Hnu S/N (eV) Span Cal. to ppm

begin

pr Meter S/N passed Cal. check using Fiesta
Meter S/N passed Cal. check using Plate

1000 - Well # 2398 complete

1000 - fix barrels for transportation

1100 - Turn samples in to sample trailer

2000 - Exit for day

VISITORS ON SITE:

NA

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.

NA

WEATHER CONDITIONS:

Cool Cloudy

IMPORTANT TELEPHONE CALLS:

NA

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PERSONNEL ON SITE:

J. Lear A. Clatter G. Rye C. Gutter

SUPERVISOR: J. Lear

DATE: 11-15-91

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FEMP RI/FS FIELD ENG./GEO. J. Lear DATE 11-8-91
 PROJECT NO. LD2-3.23 CHECKED BY C. Gruber DATE 12-4-91
 BORING NO. 2998
 PIEZOMETER NO. NA DATE OF INSTALLATION 11-8-91

BOREHOLE DRILLING

DRILLING METHOD <u>Cable tool</u>	TYPE OF BIT <u>8 in Cable tool bit</u>
DRILLING FLUID (S) USED:	CASING SIZE (S) USED:
FLUID <u>H₂O</u> FROM <u>0.0</u> TO <u>70.0</u>	SIZE <u>8 in</u> FROM <u>0</u> TC <u>80 ft</u>
FLUID <u>NA</u> FROM <u> </u> TO <u> </u>	SIZE <u>NA</u> FROM <u> </u> TC <u> </u>

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE:	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (ft)		ELEVATION ()	
TOP OF RISER PIPE	NA			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	NA			
BOREHOLE FILL MATERIALS: <u>CEMENT</u> GROUT/SLURRY BENTONITE SAND GRAVEL	TOP 0.0	BOTTOM 0.5		
	TOP 1.0	BOTTOM 57	TCP	BOTTOM
	TOP 0.5	BOTTOM 1.0	TOP	BOTTOM
	TOP NA	BOTTOM NA	TOP	BOTTOM
	TOP NA	BOTTOM NA	TOP	BOTTOM
PERFORATED SECTION	TOP NA	BOTTOM NA	TOP	BOTTOM
PIEZOMETER TIP	NA			
BOTTOM OF BOREHOLE	57			
GWL AFTER INSTALLATION	NA			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒ 83
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒

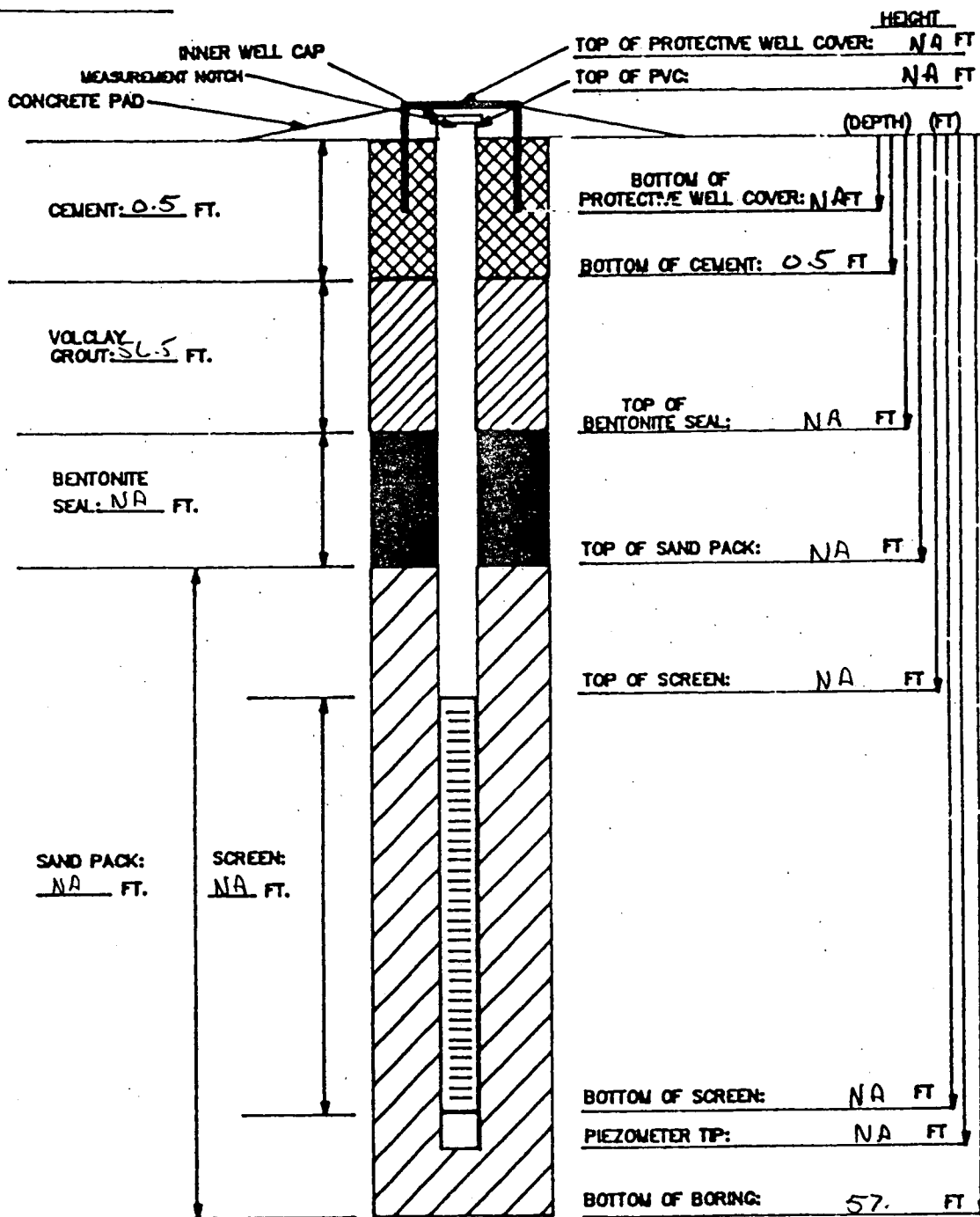
REMARKS 1. Sand had risen from 70 ft to 57 ft while Drill bit was
not in use. Boring plugged and abandoned

FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.

INSTALLATION DATE: 11-7-91

2548



BORINGHOLE DIAMETER: 8.0 INCHES

MATERIALS USED:

SAND TYPE AND QUANTITY: NA
BENTONITE PELLETS (5-GALLON BUCKETS): 1/2
BAGS OF VOLCLAY GROUT: 18
AMOUNT OF CEMENT: 1/2 80 lb bag
AMOUNT OF WATER USED: 450 gals
OTHER: NA

NOTES: NA

- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 2-INCH I.D., SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED PLUG.
- 4) WATER DEPTH/DATE:

- 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
- 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 6023.23

GEOLOGIST/ENGINEER: J. War

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VISUAL CLASSIFICATION OF SOILS

2548

J.L. 11-6-91

PROJECT NUMBER: 602-3-H-23		PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 2978		COORDINATES:	DATE 11-5-91
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 11-4-91
ENGINEER/GEOLOGIST: J. Lear	Depth	Date/Time	DATE COMPLETED: 11-8-91
DRILLING METHODS: cable Tool			PAGE 5 OF 7

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
60		50/2					
61	1700 11-5-91		0	N.R.	NA	NA	Huu - 0 ppm B ₁ - 50 cpm α - 0 cpm
62							
63							
64							
65		7					
66	1715 11-5-91	10 13	12	med. dense gray to dark gray (loam. sl. to loam. cl.) well sorted fine sub angular gravel, some sand trace silt, wet.	GP	N.A	Huu - 0 ppm B ₂ - 60 cpm α - 0 cpm
67							
68							
69							
70		50/2					
71	1145 11-6-91		0	N.R.	NA	NA	Huu - 0 ppm B ₂ - 50 cpm α - 0 cpm
72				Casing broken in boring must be plugged and abandoned. Drilling ends at 70.0 ft Sampling ends at 71.5 ft.			

NOTES: See pg. 1

VISUAL CLASSIFICATION OF SOILS

2548

JL 11-6-91

PROJECT NUMBER: 602.34.23	PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 2998	COORDINATES:	DATE 11-5-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 11-4-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 11-8-91
DRILLING METHODS: cable Tool		PAGE 4 OF 7

DEPTH (ft)	SAMPLE TYPE & NO	BLOWSON SAMPLER PER 16 in	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
46	1525 11-5-91	18 47	10	v. dense, yellowish brown, (10 yr, 5/6) well sorted medium sand, Trace gravel, moist.	SF	NA	H _{nu} - 0 ppm B ₈ - 60 cpm α - 0 cpm
47							
48							
49							
50		21		v. dense, light yellowish brown, (10 yr, 6/4) well sorted med. sand some gravel, sl. moist	SF	NR	H _{nu} - 0 ppm B ₈ - 50 cpm α - 0 cpm
51	1540 11-5-91	34 37	10				
52							
53							
54							
55		50/5					
56	1630 11-5-91		0	NR	NA	NA	H _{nu} - 0 ppm B ₈ - 50 cpm α - 0 cpm
57							
58							
59							
60							

NOTES: see page 1

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NOTES see page 1

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.3.23	PROJECT NAME: FEMP RI/FS	DATE: 11-4-91
BORING NUMBER: 2998	COORDINATES:	DATE STARTED: 11-4-91
ELEVATION:	GWL: Depth Date/Time	DATE COMPLETED: 11-9-91
ENGINEER/GEOLOGIST: J. Lear	Drain Date/Time	PAGE 2 OF 7
DRILLING METHODS: cable Tool		

DEPTH	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER	RECOVERY	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	1715 11-4-91	6	12	S.A.A.	CL	2.5	H ₂ O - 0 PPM B ₂ - 50 cpm α - 0 cpm
17	0820 11-5-91	10	9	Hard, dark gray (10yr, 4/2) silty clay. Some gravel, low plasticity, moist.	CL	4.0	H ₂ O - 0 PPM B ₂ - 50 cpm α - 0 cpm
18		12					
19	0920 11-5-91	13	4	Hard, dark gray (10yr, 4/2) gravelly clay. Some S.H., low plasticity, moist.	CL	4.0	H ₂ O - 0 PPM B ₂ - 50 cpm α - 0 cpm
20	0930 11-5-91	14	10	V. stiff, dark gray (10yr, 4/2) clay, trace gravel, low plasticity, moist.	CL	2.5	H ₂ O - 0 PPM B ₂ - 40 cpm α - 0 cpm
21		10					
22	0930 11-5-91	11	12	Soft, dark gray (10yr, 4/2) silty clay, trace gravel, med plasticity, moist.	CL	50	H ₂ O - 0 PPM B ₂ - 40 cpm α - 0 cpm
23	0945 11-5-91	29	15	Hard, yellowish brown (10yr, 5/6) silty clay, trace gravel, sl. moist. (low plasticity). 23-25 Very dense, yellowish brown (10yr, 5/6) poorly sorted sand, some gravel, dry.	CL	4.0	H ₂ O - 0 PPM B ₂ - 50 cpm α - 0 cpm
24		30			SW	NA	
25				Aquifer hit at 23-25 ft. Samples now taken every 5.0 ft.			
26							
27							
28							
29							

NOTES: See page 1

VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: <u>602.3.73</u>		PROJECT NAME: <u>FEMP RI/FS</u>	
BORING NUMBER: <u>2398</u> <u>2998</u>		COORDINATES:	DATE: <u>11-4-91</u>
ELEVATION:		GWL: Depth <u>57.73</u> Date/Time <u>11-6-91, 0800</u>	DATE STARTED: <u>11-4-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>		Depth Date/Time	DATE COMPLETED: <u>11-8-91</u>
DRILLING METHODS: <u>Cable Tool</u>			PAGE <u>1</u> OF <u>7</u>

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER (1/2 in)	RECOVERY (in)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	1530 11-4-91	2 5 7	7	med dense, brown, (10yr, 5/3) clayey silt. Some organics, moist.	ML	NA	H ₂ O - 0 ppm C ₂ - 50-60 cpm α - 0 cpm
2	1535 11-4-91	5 7 8	3	S.A.A.	ML	NA	H ₂ O - 0 ppm C ₂ - 50-60 cpm α - 0 cpm
3	1540 11-4-91	5 7 8	3	V. stiff, brown, (10yr, 5/3) silty clay mod. plasticity, moist	CL	3.5	H ₂ O - 0 ppm C ₂ - 50 cpm α - 0 cpm
4	1545 11-4-91	5 7 8	8	med dense, light yellowish brown, (10yr, 5/3) silt to clayey silt, moist to wet	ML	NA	H ₂ O - 0 ppm C ₂ - 60 cpm α - 0 cpm
5	1550 11-4-91	10 14 18	18	dense, yellowish brown (10yr, 5/4) silty clay Some sand.	CL	NA	H ₂ O - 0 ppm C ₂ - 60 cpm α - 0 cpm
6	1555 11-4-91	18 24 28	13	hard yellowish brown, (10yr, 5/4) silty clay, trace gravel, low plasticity, moist	CL	3.5	H ₂ O - 0 ppm C ₂ - 50 cpm α - 0 cpm
7	1555 11-4-91	24 28	13	8.75' stiff, gray to yellowish brown (10yr, 5/1) to (10yr, 5/4) silty clay, trace gravel, low plasticity, moist	CL	2.5	H ₂ O - 0 ppm C ₂ - 60 cpm α - 0 cpm
8	1630 11-4-91	18 24	7	stiff, dark gray (10yr, 5/2) silty clay, some gravel, low plasticity, st. moist	CL	2.0	H ₂ O - 0 ppm C ₂ - 60 cpm α - 0 cpm
9	1635 11-4-91	19 20 25	6	S.A.A.	CL	2.0	H ₂ O - 0 ppm C ₂ - 50-60 cpm α - 0 cpm
10	1650 11-4-91	18 14 18	11	V. stiff, gray, (10yr, 5/1) clayey silt, some gravel, low plasticity, st. moist.	ML	2.5	H ₂ O - 0 ppm C ₂ - 50 cpm α - 0 cpm
11	1700 11-4-91	14 12 25	5	V. stiff, gray to dark gray (10yr, 5/1 to 10yr, 5/2) silty clay, some gravel, low plast. moist.	CL	2.5	H ₂ O - 0 ppm C ₂ - 50 cpm α - 0 cpm

NOTES:

Drilling Contractor - Penn Drilling
Drilling Equipment - Cyclone 45
Driller - Craig Coulter
Asst. - Gary Dye

S.A.A. - Same As Above

N.R. - No Recovery

Backgrounds

H₂O - 0 ppm
C₂ - 50-60 cpm
α - 0 cpm

No Samples bottled or kept as per work plan; therefore
No Sample Nos. Needed

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FIELD ACTIVITY DAILY LOG

DATE	11/8/91
NO.	NA
SHEET	1 OF 1

PROJECT NAME FEMP RI/FS		PROJECT NO. 602.323	
FIELD ACTIVITY SUBJECT:			
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS:		METER CALIBRATION NA 2548	
0900 - Arrive at ASI Do timesheet		Hnu Calibration Gas NA	
0940 - to B ² 2998 stencil drums for disposition		Hnu S/N	(eV) Span Cal. to ppm
1040 - leave bioassy		Hnu S/N	(eV) Span Cal. to ppm
1050 - clean vehicle		px Meter S/N	passed Cal. check using
1130 - at office		q Meter S/N	passed Cal. check using
1200 - Exit for Day			
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.	
None		None	
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS:	
Cold clear		None	
PERSONNEL ON SITE: J. Lear A. Clecter		90	
SUPERVISOR: J. Lear		DATE: 11-8-91	

FIELD ACTIVITY DAILY LOG

DATE	11/7/91
NO.	NA
SHEET	1 OF 1

2548

PROJECT NAME FEMP RI/FS

PROJECT NO. 602.3.23

FIELD ACTIVITY SUBJECT: B# 2998

DESCRIPTION ON DAILY ACTIVITIES AND EVENTS

METER CALIBRATION

- 0700 - Arrive at ASI
0730 - Receive Info from Bill Hertel
on Decon of Rig, New hole
numbers, where to move the
new hole.
0900 - get drillers for grouting of
B# 2998
0930 - Grout Boring, clean drums
1200 - Lunch
1300 - get check at office
1330 - clean-up site
1500 - Turn in drum samples at trailer
1700 - At office show B. Hertel FADL for 11-6
1730 - EAT for Day

Hnu Calibration Gas

Hnu S/N	(eV) Span	Cal. to	ppm
Hnu S/N	(eV) Span	Cal. to	ppm

p Meter S/N passed Cal. check using

a Meter S/N passed Cal. check using

VISITORS ON SITE:

Various Penn Drill Employees

CHANGES FROM PLANS AND SPECIFICATIONS, AND
OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.

NA

WEATHER CONDITIONS:

Cold, snow

IMPORTANT TELEPHONE CALLS:

NA

PERSONNEL ON SITE J. War G. Dye C. Coulter A. Cloutier

SUPERVISOR J. War

DATE: 11-7-91

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FIELD ACTIVITY DAILY LOG

DATE	11/6/91
NO.	NA
SHEET	1 OF 1

PROJECT NAME FEMP RI/FS SL 11-6-91		PROJECT NO. 602.5.112548
FIELD ACTIVITY SUBJECT: B# 2398-2998		
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS:		METER CALIBRATION
<p>0700 - Arrive at ASI</p> <p>0730 - gather instruments and supplies at trailer</p> <p>0800 - at site, begin drilling</p> <p>0900 - casing appears broken at 65 to 70 ft. Hard ground may be attributed to this. Blow counts 50%, slow pushing of casing</p> <p>1000 - To office to talk to Bill Hertel for technical advice; 1) possibility of pushing broken casing below total well depth of 70.0 ft 2) possibility of plugging and abandoning B#2398. Hertel will talk to WEMCO Geo Chem people and discuss possibilities, in the mean time Drill crew heads to site and pushes casing below well total depth.</p> <p>1115 - begin drilling to 70.0 ft, last description taken - no recovery</p> <p>1215 - Lunch</p> <p>1315 - At site, call Bill Hertel, no info from WEMCO yet, Drill team will Assume well is to be set, Drillers sent to get grout and sand.</p> <p>1340 - B. Hertel calls with WEMCO Geo Chem info. Do not set well, casing stuck in ground can act as an uranium magnet and can skew analytical results. must plug and abandon Boring.</p> <p>1415 - pulling casing.</p> <p>1445 - Craig Coulter believes he may have a grip on the broken casing believes well can be set; will Attempt</p> <p>1500 - drilling from 65 to 70 ft very difficult. 70 ft is optimum well depth</p> <p>1545 - can't get passed 65 ft. Drillers will grout boring</p> <p>1600 - Pull casing last casing does not come out</p> <p>1730 - Exit to office</p> <p>1800 - Exit site</p>		<p>Hnu Calibration Gas Isobutylene</p> <p>Hnu S/N 1104 (10.2 eV) Span 7.50 Cal. to 55 ppm</p> <p>Hnu S/N (eV) Span Cal. to ppm</p> <p>gr Meter S/N 13 passed Cal. check using Th 230</p> <p>* Meter S/N 5 passed Cal. check using ↓</p>
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
Various Penn Drilling employees Cate Grube		Boring 29 is plugged and Abandoned due to casing break
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS:
Cold Cloudy		B. Hertel
PERSONNEL ON SITE J. Lear A. Cleeter C. Coulter G. Dye		
SUPERVISOR: J. Lear		DATE: 11-6-91

FIELD ACTIVITY DAILY LOG

DATE	11/15/91
NO.	NAI-13
SHEET	1 OF 1

PROJECT NAME FEMP RI/FS		PROJECT NO. 602.3.11
FIELD ACTIVITY SUBJECT: 3* 2998		
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS		METER CALIBRATION
<p>0700 - Arrive at ASI</p> <p>0730 - Calibrate Hnu head to old trailers, get Hnu head to site</p> <p>0800 - At site defrost everything for drilling</p> <p>0830 - Drilling begins</p> <p>1130 - Lunch</p> <p>1230 - Drillers at monthly meeting</p> <p>1330 - Drilling Resumes</p> <p>1700 - Water struck at 65.0' sample. let sit over night to get proper water level</p> <p>1715 - Clean-up</p> <p>1740 - To office give Tom Anderson ERA and perm. permits for LSP</p> <p>1750 - Exit</p>		<p>2548</p> <p>Hnu Calibration Gas Isobutylene</p> <p>Hnu S/N 1104 (10.2 eV) Span 8.25 Cal. to 55 ppm 55</p> <p>Hnu S/N (eV) Span Cal. to ppm</p> <p>pr Meter S/N 13 passed Cal. check using Th</p> <p>4 Meter S/N 5 passed Cal. check using 230</p>
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
<p>Fire & safety, Ben Brier</p> <p>Bruce Myers</p>		NA
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS:
Cold Sunny		NA
PERSONNEL ON SITE J. Lear A. Clatter G. Dye C. Coulter		93
SUPERVISOR: J. Lear		DATE: 11-5-91

FIELD ACTIVITY DAILY LOG

DATE	11/4/91
NO.	NA
SHEET	1 OF 1

PROJECT NAME JEMP RI/FS		PROJECT NO. 602.3.11	
FIELD ACTIVITY SUBJECT 2398			
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS		METER CALIBRATION 2548	
<p>0700 - Arrive at ASI</p> <p>0730 - Talk to Supervisors concerning Misc. Borings and finishing DU-2 Line Sludge Pond Hand Auger & water samples</p> <p>0830 - Tell Drillers at trailers to set up on boring 2398</p> <p>0900 - To 2398, Drillers bring Rig</p> <p>1000 - wait for Utility Approval for Drilling</p> <p>1100 - Approval Given</p> <p>1150 - Lunch</p> <p>1230 - To site set up for Drilling and sample description No samples taken on Misc. Well construction</p> <p>1300 - Sample description and Drilling begins</p> <p>1730 - Drilling ends total Depth 16.5'</p> <p>1800 - exit site</p>		<p>Hnu Calibration Gas Isobutylene</p> <p>Hnu S/N 1104 (10.2 eV) Span 7.29 Cal. to 55 ppm</p> <p>Hnu S/N (eV) Span Cal. to ppm</p> <p>pr Meter S/N 13 passed Cal. check using</p> <p>4 Meter S/N 5 passed Cal. check using</p>	
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.	
<p>Ken Grumki</p> <p>Ben Brier</p>		<p>NA</p>	
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS	
<p>cold cloudy</p>		<p>NA</p>	
PERSONNEL ON SITE J. Lear A. Clester G. Dye Craig Coulter Dan Rather		94	
SUPERVISOR J. Lear		DATE:	

B. Zone

1500 - 0 ppm

1600 - 0 ppm

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FEMP RI/FS FIELD ENG./GEO. Ken Marion DATE 11-13-91
 PROJECT NO. 602.3.11 CHECKED BY _____ DATE _____
 BORING NO. 2421
 PIEZOMETER NO. N/A DATE OF INSTALLATION 11-13-91 **2548**

BOREHOLE DRILLING

DRILLING METHOD <u>Cable Tool</u>	TYPE OF BIT <u>10" Churn bit</u>
DRILLING FLUID (S) USED:	CASING SIZE (S) USED:
FLUID <u>Water</u> FROM <u>0</u> TO <u>85</u>	SIZE <u>10 3/4 in.</u> FROM <u>0</u> TO <u>85 ft.</u>
FLUID _____ FROM _____ TO _____	SIZE _____ FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>Cable Tool</u>	RISER PIPE MATERIAL <u>316 stainless steel</u>
DIAMETER OF PERFORATED SECTION <u>4.0 in I.D.</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE:	O.D. <u>4 7/8 in.</u> I.D. <u>4.0 in.</u>
SLOTS <input checked="" type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>67 ft.</u>
AVERAGE SIZE OF PERFORATIONS <u>.010</u>	JOINING METHOD <u>flush-joint threaded</u>
TOTAL PERFORATED AREA <u>15 ft.</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5 ft.</u>	OTHER PROTECTION <u>Steel well cover with</u>
PROTECTIVE PIPE O.D. <u>10 3/4 in.</u>	<u>lock</u>

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION (+/-)	
TOP OF RISER PIPE	2.0			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	2.5			
BOREHOLE FILL MATERIALS:				
GROUT/SLURRY	TOP 0	BOTTOM 56	TOP	BOTTOM
BENTONITE	TOP 61	BOTTOM 56	TOP	BOTTOM
SAND	TOP 85	BOTTOM 61	TOP	BOTTOM
GRAVEL	TOP N/A	BOTTOM N/A	TOP N/A	BOTTOM N/A
PERFORATED SECTION	TOP 65	BOTTOM 80	TOP	BOTTOM
PIEZOMETER TIP	82			
BOTTOM OF BOREHOLE	85			
GWL AFTER INSTALLATION	70 ^{K.M.} 68.30 11-14-91			

IS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES ☐ NO ☒

IS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES ☐ NO ☒ **95**

MARKS The temporary casing was removed during the installation of the well

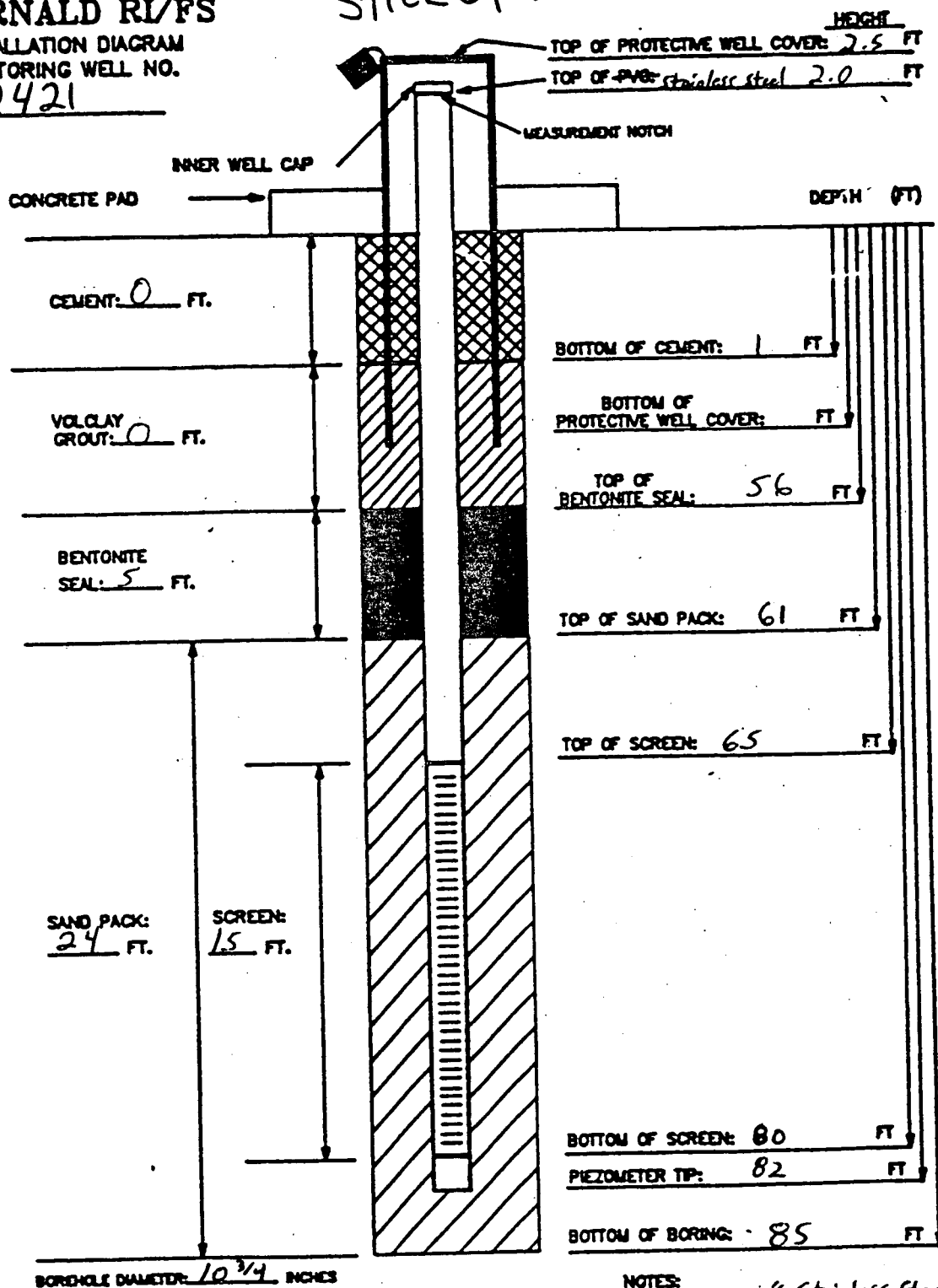
FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.

2421

INSTALLATION DATE: 11-13-91

Stickups



MATERIALS USED:

SAND TYPE AND QUANTITY: 430 sand, 17 bags
BENTONITE PELLETS (5-GALLON BUCKETS): 5
BAGS OF VOLCLAY GROUT: 14 bags
AMOUNT OF CEMENT: 1/2 bag
AMOUNT OF WATER USED: 750 gallons
OTHER:

NOTES:

- 1) RISER PIPE IS 3" SCHED. 40 - 4" Stainless steel
PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 3" SCHED. 40 - 4 in. I.D.
PVC PIPE WITH 0.020-INCH SLOTS - 40 in slots
- 3) LOWER END OF SCREEN IS CAPPED WITH
AN EDO CAP OR THREADED SLIP.
- 4) WATER DEPTH/DATE: 68.30 / 11-14-91

TASK: 602.3.11

GEOLOGIST/ENGINEER: Ken Marion

VISUAL CLASSIFICATION OF SOILS

2548

OBJECT NUMBER: 602, 3.11	PROJECT NAME: FEMP RI/FS		
BORING NUMBER: 2421	COORDINATES:		DATE 11/11/91
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 11/5/91
ENGINEER/GEOLOGIST: Ken Marion	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Cable Tool 10" drill bit			PAGE 8 OF 8

DEPTH ft	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 in. 1	RECOVERY (in.)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
67.5				Split Spoon Samples will be taken at 5 ft. intervals			
70	11-11-91 1646	5 17 18	12	Dense light olive brown (2.5Y, 5/4) gravelly sand, wet	SW	N/A	H _{nu} = 170 B _r = 60 α = 0 The H _{nu} reading is questionable
71				No Recovery			
71.5				Split spoon samples will be taken at 5 ft. intervals			
75	11-11-91 1730	3 4 13	18	Medium dense light olive brown (2.5Y, 5/4) gravelly sand, wet	SW	N/A	H _{nu} = 120 B _r = 60 α = 0 The H _{nu} reading is questionable
76.5				Split Spoon samples will be taken at 5 ft. intervals			
80	11-12-91 0930	5 7 10	16	Medium dense light olive brown (2.5Y, 5/4) gravelly SAND, wet	SW	N/A	H _{nu} = 2 ppm B _r = 60 cpm α = 0 cpm
81.5				No Recovery			
				Bottom of bore hole is at 85 ft.			

NOTES:

11/12/91

W.L. is 68.80 at 0815

H_{nu} = 2 ppm } Background
 B_r = 60 cpm } Levels
 α = 0 cpm }

* Note: The H_{nu} is connected to an air dryer

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VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602.3.11	PROJECT NAME: FEMP RI/FS		
BORING NUMBER: 2421	COORDINATES:		DATE 11/7/91
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 11/5/91
ENGINEER/GEOLOGIST: Ken Marien	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Cable Tool 10" drill bit	PAGE 7		OF 8

DEPTH ft.	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 in.	RECOVERY in.	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
51.5				split spoon samples will be taken at 5 ft. intervals			
55	11-7-91	31	14	Very dense light gray (10YR, 7/2) pea size gravel with sand, dry	GW	N/A	H _{nu} = N/A BR = 60 cpm α = 0 cpm
56.2	1530	49		No Recovery			
56.5		52		split spoon samples will be taken at 5 ft. intervals			
60	11-7-91	33	12	Very dense light gray (10YR, 7/2) coarse gravel with sand, dry	GW	N/A	H _{nu} = N/A BR = 60 cpm α = 0 cpm
61	1630	46		No Recovery			
61.5		50		split spoon samples will be taken at 5 ft. intervals			
65	11-11-91	5	12	Very dense light gray (10YR, 7/2) medium SAND, dry	SP	N/A	H _{nu} = .2 ppm BR = 60 cpm α = 0 cpm
66	1600	20		No Recovery			
66.5		37		split spoon samples will be taken at 5 ft. intervals			
67.5							

NOTES:

11/11/91

H_{nu} = .2 ppm
BR = 60 cpm
 α = 0 cpm

} Background Levels

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VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602.3.11	PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 2421	COORDINATES:	DATE 11/7/91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 11/5/91
ENGINEER/GEOLOGIST: Ken Marion	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Cable Tool 10" drill bit	PAGE 6 OF 8	

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 in.	RECOVERY (in.)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
37.5				No samples taken here			
40	11-7-91	1/2	12	medium dense light brownish gray (2.54, 6/12) medium sand and trace gravel, dry	SW	N/A	H _{nu} = N/A B _r = 60 cpm α = 0 cpm
41	1105	25		N/O Recovery			
41.5		25		split spoon samples will be collected at 5 ft. intervals			
45	11-7-91	25	12	very medium dense light brownish gray (2.54, 6/12) medium sand and trace gravel, dry	SW	N/A	H _{nu} = N/A B _r = 60 cpm α = 0 cpm
46	1350	70		N/O Recovery			
46.5				split spoon samples will be collected at 5 ft. intervals			
50	11-7-91	3	15	medium dense light gray (104R, 7/12) medium sand with trace fine gravel, dry	SW	N/A	H _{nu} = N/A B _r = 60 cpm α = 0 cpm
51.25	1420	9		N/O Recovery			
51.5		15		split spoon samples will be taken at 5 ft. intervals			

NOTES:

N/A

VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602-3-11	PROJECT NAME:	
BORING NUMBER: 2421	COORDINATES:	DATE 11-6-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 11-5-91
ENGINEER/GEOLOGIST: Ken Marion	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Cable Tool 10" drill bit	PAGE 5 OF 8	

DEPTH ft.	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 in.	RECOVERY in.	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
30.0	11-6-91 1030	5 5 12	18	stiff olive gray (5Y, 5/2) SILTY CLAY with a little sand and trace gravel, moist, medium plasticity	CL	10	H _{nu} = N/A BS = 60 cpm α = 0 cpm
31.5	11-7-91 0925	31 18	12	Medium dense light brownish gray (2.5Y, 6/2) medium sand, dry	SM	N/A	H _{nu} = Meter is malfunctioning BS = 60 cpm α = 0 cpm
32.5		17		No Recovery			
33	11-7-91 0950	15 13 13	10	Medium dense light brownish gray (2.5Y, 6/2) medium sand, dry	SM	N/A	H _{nu} = N/A BS = 60 α = 0
34.5				No Recovery			
35	11-7-91 1015	12 20 22	12	Medium dense light brownish gray (2.5Y, 6/2) medium sand and trace gravel, dry	SW	N/A	H _{nu} = N/A BS = 60 cpm α = 0 cpm
36				No Recovery			
37.5	11-7-91 1105	16 25 25	12 K.M. 11-7-91	No samples taken here			

NOTES

Notes

11/7/91

H_{nu} = 0 ppm } Background
 BS = 60 cpm } Levels
 α = 0 cpm }

VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602.3.11	PROJECT NAME: FEMP RI/FS		
BORING NUMBER: 2921	COORDINATES:		DATE 11/6/91
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 11/5/91
ENGINEER/GEOLOGIST: Ken Marion	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Cable Tool 10" drill bit.			PAGE 4 OF 8

DEPTH ft.	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 6 in.	RECOVERY in.	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
22.5	11-0-91 1415	6 16 30	18	stiff gray (SY, S/I) SILTY CLAY with sand and a little gravel, moist, medium plasticity	CL	2.00	H _{nu} = 70 ppm B _r = 80 cpm α = 0 cpm
24.0	11-0-91 1430	2 3 5	16	stiff gray (SY, S/I) SILTY CLAY with sand and a little gravel, fossils, moist, medium plasticity	CL	1.0	H _{nu} = 50 ppm B _r = 80 cpm α = 0 cpm
25.3				NO Recovery			
25.5	11-0-91 1400	2 3 5	6	Medium stiff olive gray (SY, 4/2) SILTY CLAY with sand and gravel, moist, medium plasticity	CL	1.0	H _{nu} = The meter is malfunctioning, the previous readings may not be accurate B _r = 80 α = 0
26.0				NO Recovery			
27.0	11-0-91 1407	5 8 8	15	Medium stiff olive gray (SY, 4/2) SILTY CLAY with sand and a little fine gravel, moist, medium plasticity	CL	.75	H _{nu} = N/A B _r = 80 cpm α = 0 cpm
28.25				NO Recovery			
28.5	11-0-91 1420	1 3 5	0	NO Recovery	N/A	N/A	
30.0							

NOTES

N/A

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VISUAL CLASSIFICATION OF SOILS

2548

OBJECT NUMBER: 602-3.11	PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 2421	COORDINATES:	DATE 11/6/91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 11/5/91
ENGINEER/GEOLOGIST: Ken Marion	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Cable Tool 10" drill bit		PAGE 3 OF 8

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 IN.	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
15.0	11-6-91 0912	8 12 12	18	stiff olive gray (SY, S/2) SILTY CLAY with sand and a little gravel, wet, medium plasticity	CL	1.75	H _{nu} = .2 ppm B _x = 80 cpm α = 0 cpm
16.5	11-6-91 0930	12 30 33	12	stiff olive gray (SY, S/2) SILTY CLAY with sand and a little gravel, damp, medium plasticity light gray (SY, 7/1) limestone cobble.	CL N/A	2.0 N/A	H _{nu} = .2 ppm B _x = 80 cpm α = 0 cpm
17.5				No Recovery			
18	11-6-91 1210	8 31 30	14	very stiff olive gray (SY, S/2) SILTY CLAY with sand and gravel, trace greenish gray mottling, moist, medium plasticity	CL	2.5	H _{nu} = .2 ppm B _x = 80 cpm α = 0 cpm
19.2				No Recovery			
19.5	11-6-91 1343	3 4 5	13	stiff gray (SY, S/1) SILTY CLAY with sand and a little gravel, moist, medium plasticity	CL	1.25	H _{nu} = .2 ppm B _x = 80 cpm α = 0 cpm
20.6				No Recovery			
21	11-6-91 1347	6 9 12	11	medium stiff gray (SY, S/1) SILTY clay with sand and a little gravel, trace greenish gray mottling, moist, medium plasticity	CL	.75	H _{nu} = 17 ppm B _x = 80 cpm α = 0 cpm
21.9				No Recovery			
22.5				No Recovery			

NOTES

N/A

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VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602.3.11	PROJECT NAME: FEMP RI/FS		
BORING NUMBER: 2421	COORDINATES:		DATE 11/5/91
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 11/5/91
ENGINEER/GEOLOGIST: Ken Morien	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Cable Tool 10" drill bit	PAGE 2		OF 8

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 1.6 in. 1	RECOVERY (in.)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
7.5	11-S-91 1410	25 25 22	16	Very stiff gray (SY, S/1) SILTY CLAY with a little sand and gravel, damp, low plasticity	CL	4.0	H _{max} = 0 ppm BX = 60 cpm X = 0 cpm
9.0	11-S-91 1435	18 21 23	18	Very stiff olive gray (SY, S/2) SILTY CLAY with sand and a little gravel, trace fossils, damp, low plasticity	CL	3.5	H _{max} = 0 ppm BX = 60 cpm X = 0 cpm
10.5	11-S-91 0840	5 5 1	5	stiff olive gray (SY, S/2) SILTY CLAY with sand and a little gravel, wet, medium plasticity	CL	2.0	H _{max} = .2 ppm BX = 80 cpm X = 0 cpm
12.0	11-G-91 0845	8 9 11	16	stiff olive gray (SY, S/2) SILTY CLAY with sand and a little gravel, wet, medium plasticity	CL	1.75	H _{max} = .2 ppm BX = 80 cpm X = 0 cpm
13.3 13.5	11-G-91 0905	3 5 8	16	stiff olive gray (SY, S/2) SILTY CLAY with sand and a little gravel, wet, medium plasticity	CL	1.5	H _{max} = .2 ppm BX = 80 cpm X = 0 cpm
14.8 15.0				No Recovery			

NOTES

Notes

11/6/91

H_{max} = .2 ppm
BX = 80 cpm
X = 0 cpm

} Background
Levels

VISUAL CLASSIFICATION OF SOILS

2548

PROJECT NUMBER: 602.3.11	PROJECT NAME: FEMP RI/FS	
BORING NUMBER: 2421	COORDINATES:	DATE 11/5/91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 11/5/91
ENGINEER/GEOLOGIST: Ken Marion	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: Cable Tool 10" drill bit	PAGE 1 OF 8	

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER 16 in.	RECOVERY (in.)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
0	11-5-91	2	12	stiff olive brown (2.5Y, 4/3) CLAYEY SILT with organic matter, damp, low plasticity	ML	1.25	H _{nu} = .2 ppm
.5	1005	9		Hard light olive brown (2.5Y, 5/4) SILTY CLAY with sand and gravel, a little gray (5Y, 6/1) mottling, trace organic matter, dry, non plastic	CL	>4.5	B _x = 60 cpm α = 0 cpm
1.0		15		No Recovery			
1.5	11-5-91	10	12	Hard light olive brown (2.5Y, 5/4) SILTY CLAY with sand and a little gravel, a little gray (5Y, 6/1) mottling, trace organic matter, dry, non plastic	CL	>4.5	H _{nu} = .2 ppm B _x = 60 cpm α = 0 cpm
2.5	1020	13		No Recovery			
3.0		25		No Recovery			
4.2	11-5-91	12	14	Hard light olive brown (2.5Y, 5/4) SILTY CLAY with sand and a little gravel, a little gray (5Y, 6/1) mottling, damp, non plastic	CL	4.25	H _{nu} = .2 ppm B _x = 60 cpm α = 0 cpm
4.5		15		No Recovery			
5.8	11-5-91	15	16	Hard olive (5Y, 4/3) SILTY CLAY with sand and gravel, a little gray (5Y, 5/1) mottling and black staining, damp, non plastic	CL	>4.5	H _{nu} = .2 ppm B _x = 60 cpm α = 0 cpm
6.0	1035	23		No Recovery			
7.3	11-5-91	33	16	Very stiff olive gray (5Y, 5/2) to gray (5Y, 5/1) SILTY CLAY with sand and gravel, damp, non plastic	CL	4.0	H _{nu} = .2 ppm B _x = 60 cpm α = 0 cpm
7.5	1040	38		No Recovery			
		35		No Recovery			

NOTES:

Drilling Company: Pennsylvania Drilling

Driller: Dave Newman

Assistant Driller: Bob Johnson

Samples collected per ASTM Standard Penetration Test
Colors Identified using Munsell Color Chart

H _{nu} S/N: A01345	.2 ppm	} Background Levels
B _x S/N: 86112	60 cpm	
α S/N: 55361	0 cpm	

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	17	91
	NO.			
	SHEET	1	OF	1

PROJECT NAME FEMP RI/FS

PROJECT NO. 602.3.11

FIELD ACTIVITY SUBJECT: OU-5 Sampling

#2421

DESCRIPTION ON DAILY ACTIVITIES AND EVENTS:

0700 Arrive at ASI

It's snowing. There's about an inch of snow on the ground. I take the Hm meter to Ron Gill for examining. It began malfunctioning yesterday afternoon.

Get Personal protective equipment from Supply trailer.
Ken Barnhart of health & safety is here to observe again today

0900 Health & Safety Meeting

0925 Collected split spoon sample from 31.5-33 ft. → Hit the sandy Aquifer

0950 Collected split spoon sample from 33-34.5 ft.

1015 collected split spoon sample from 34.5-36.0 ft.

1105 collected split spoon sample from 40-41.5 ft.

1130 Lunch

1300 Joe Mediate is my assistant for the afternoon / stopped snowing
Drilling from 40 to 45 ft.

350 collecting split spoon sample from 45-46.5 ft.

420 " " 50-51.5 ft.

420 " " 55-56.5 ft.

1538 " "

1545 Talk to Doug Harnal on telephone. He says there's paper work from the K-65 slant boring project that needs to be finished.

1630 collect split spoon sample from 60-61.5 ft.
Pushing another 10 ft. of steel casing
Drilling down to 65 ft.

730 Leaving drilling site

1800 Leaving ASI

0830
10.2 eV Hm calibration checked
using Isobutylene-Air mixture.
Span set to 2.94. Batch #JH12-122190
Bo and A meters were calibration
checked using ~~with~~ lantern mantles
11-7-91

VISITORS ON SITE:

Dave Meredith

**CHANGES FROM PLANS AND SPECIFICATIONS, AND
OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.**

None

WEATHER CONDITIONS:

cloudy, cold, snow

IMPORTANT TELEPHONE CALLS:

None

PERSONNEL ON SITE

Dave Newman, Bob Johnson

SUPERVISOR:

Ken Marion

DATE: 11/7/91

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FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	6	91
	NO.			
	SHEET		OF	

PROJECT NAME <u>FEMP RI/FS</u>		PROJECT NO. <u>602.3.11</u>
FIELD ACTIVITY SUBJECT: <u>OU-5 Sampling</u>		#2421
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS:		
<p>0700 Arrive at ASI 2548 Leave a copy of the list of supplies wanted by William Bowman on Doug Harmel's desk.</p> <p>0730 Drillers and myself are at boring site We prepare to drive split spoons. We will start from 10.5 ft. below ground surface. until we hit the sand & gravel aquifer we must do continuous split spoon sampling. The drillers will split spoon down 3' and then drill 3'</p> <p>0810 Health & Safety Meeting Ken Barnhart from Health & Safety is reviewing our progress again today.</p> <p>0840 ↓ Driving split spoons and drilling The last split spoon collected was from 18-19.5 ft.</p> <p>1010 The drillers drill down to 19.5 ft. Then they drive another 10' section of 10" diameter temporary casing</p> <p>1100 Bruce Myers comes by to see how things are going.</p> <p>1130 Lunch</p> <p>1343 Collected split spoon sample from 19.5-21 ft. By 1430 we had collected split spoons down to 25.5 ft. The clutch wasn't working properly so some time was taken out to work on this part of the drill rig. Apparently it had been greased before and this shouldn't have been done.</p> <p>1600 Resuming the continuous sampling via split spoons 1630 collected the last split spoon of the day. It was from 30-31.5 ft. The drillers install another 10' of temporary casing. It's now cased down to 30'</p> <p>1730 Leaving site. Check w/ Cate Grube on the work procedures</p>		
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
None		None
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS:
cloudy, windy, cold		
PERSONNEL ON SITE: <u>Dave Newman, Bob Johnson</u>		106
SUPERVISOR: <u>Ken Marion</u>		DATE: <u>11/6/91</u>

0815
 10.2 ev Hm Calibration check.
 using Escalator. Spd is set
 to 300. Meter reads 55 ppm
 Batch # for gas is J3472-122190
 calibration checked Bf and d. meta
 using lantern mantle

FERNALD
RI/FS

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	5	91
	NO.			
	SHEET	1	OF	1

PROJECT NAME FEMP RI/FS		PROJECT NO. 6023.11
FIELD ACTIVITY SUBJECT: OU-5 Sampling		#2421
DESCRIPTION ON DAILY ACTIVITIES AND EVENTS:		2548
<p>0700 Arrive at ASI</p> <p>0730 I arrive at boring site I set up the decon area and sampling area I mark the perimeter of the work area with caution tape I get some paper work partially filled out in advance. The drillers are filling the water truck with water</p> <p>0945 Health & Safety Meeting</p> <p>1005 collect split spoon sample from 0-1.5 ft. interval " 1.5-3.0 ft. interval 1020 " " 3.0-4.5 ft. interval 1035 " " 4.5-6.0 ft. interval 1035 " " 6.0-7.5 ft. interval 1040 "</p> <p>1130 Lunch</p> <p>1300 Monthly meeting held at ERA by John Wood</p> <p>1410 collect split spoon sample from 7.5-9.0 ft. interval 1435 " " 9.0-10.5 ft. interval</p> <p>1450 ↓ Drilling down to 10.5 ft.</p> <p>1725</p> <p>1730 Waiting for guard to open s-2 gate</p> <p>1745 pick up some more DI water for decon at the trailers</p> <p>1755 Put the Hnu on charge</p> <p>1800 Leaving ASI</p>		
VISITORS ON SITE: Marc Harris (WEMCO QA)		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS. None
WEATHER CONDITIONS: Sunny and Very cold		IMPORTANT TELEPHONE CALLS: None 107
PERSONNEL ON SITE: Bob Johnson, Dave Newman		
SUPERVISOR: Ken Marion		DATE: 11/5/91